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A STUDY OF THREE NORTHERN SETTLEMENTS;
FORT NORMAN, FORT FRANKLIN, AND NORMAN WELLS,
N.W.T.

by

DOUGLAS ALLAN WEIR

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled A Study of Three Northern Settlements--Fort Norman, Fort Franklin, and Norman Wells, N.W.T. submitted by Douglas Allan Weir in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

Within the Boreal Forest zone of the Northwest Territories of Canada, there are a large number of small communities which exist as islands of settlement in an extensive area. This thesis analyzes three of these settlements: Fort Norman, Fort Franklin and Norman Wells, which seem to be representative of the majority of northern* settlements. It was discovered upon examination of the three settlements that there were fundamental differences between them. On the basis of differences in the historical pattern of development and present function a proposed classification for each type of settlement is presented: Fort Norman, a 'local service and administrative center'; Fort Franklin, a 'satellite settlement'; and Norman Wells, a 'company town'.

Fort Norman developed during the nineteenth century as a fur trading post around which Indians tended to settle. The settlement attained a greater degree of permanency with the establishment of missions and, later, government services such as an R.C.M.P. detachment, an Indian Agent, a school, a nursing station and a Game Management Office. At present, the settlement functions as a local fur trading center. The resident government services provide administration and services for a large area including the settlements of Fort Franklin and Norman Wells.

Fort Franklin is essentially an Indian community with certain basic services which include a trading post, a mission, a school, and a nursing station. The settlement has developed relatively recently compared to Fort Norman and it is off the mainline of communication.

*Throughout this thesis the term "northern" is used synonymously with the political unit the "Northwest Territories".

Originally, the Indians of the Fort Franklin area traded with Fort Norman. Although Fort Norman has lost this regional trading function, Fort Franklin remains dependent upon Fort Norman for government administrative services.

Norman Wells has been developed by Imperial Oil Limited for the sole purpose of utilizing the local oil resources. Housing and services are provided by the company for its employees who are brought in from outside the local area. The site of the community is determined by the existence of the resource and its livelihood is tied to the continued availability of the resource.

ACKNOWLEDGEMENTS

In most studies concerned with northern areas the researcher is handicapped by an almost complete absence of published statistics and written information. It is in the overcoming of these limitations that I feel especially indebted to the residents of Fort Norman, Fort Franklin, and Norman Wells for their willing and generous support. Among these, a few should receive a special note of thanks: Father Labat O.M.I., J. Kostellnik and R. Douglas of Fort Norman; Father Fumoleau O.M.I. of Fort Franklin; and J.W. Newton and J. Shaw of Norman Wells.

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In addition I am particularly grateful for the guidance and direction given by my supervisor Professor W.C. Wonders and for his constructive criticisms of my submitted material.

I would also like to thank the Directorate of the Boreal Institute who provided me with a research grant to cover the expenses of the three months of field research in the three settlements during the summer of 1966.

The successful completion of this thesis as such, was made possible by the assistance of Mr. Jack Chesterman and Roger Huggins with maps and photographs, Mrs. O. Parsons for multilithing, and by the skill of Mrs. Peggy Schmidt in typing the final format.

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INTRODUCTION

This study concerns the characteristics and classification of three Northern Canadian settlements: Fort Norman, Fort Franklin and Norman Wells. They are all located within the Boreal Forest zone of the Northwest Territories. Norman Wells is located on the east bank of the Mackenzie River 1100 air miles north-northwest of Edmonton, Alberta. Fort Norman is located on the east bank of the Mackenzie 50 miles southeast of Norman Wells and Fort Franklin is 100 miles east-southeast of Norman Wells near the outlet of Great Bear Lake. Fort Norman is one of the traditional 'fort towns' established along the Mackenzie as a result of the fur trade which began during the nineteenth century. The majority of the residents are Indians and Metis who are largely dependent upon the renewable resource base--hunting, trapping and fishing. During the twentieth century, the settlement developed certain local government administrative services and today these services also are provided to other settlements (Fort Franklin and Norman Wells) within its local area. Fort Franklin is essentially a native settlement with certain basic services such as a Hudson's Bay trading post, a mission, a school, and a nursing station. Administrative services are provided by the government agencies located in Fort Norman. As in the latter settlement, the natives are largely dependent on the renewable resource base. Norman Wells has been developed by the Imperial Oil Limited for the sole purpose of developing the local oil field.

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The oil refining activity dominates all aspects of the community.

The Classification

Initial interest in the problem of classification of northern settlements was sparked by J. Fried's article, "Settlement Types in Northern Canada".¹ Through the reading of general articles on the Northwest Territories and more particularly, articles pertaining to northern settlement,² the basis for a classification was achieved. The classification was influenced by all of the articles cited in footnote number 2, but Fried's and Cohen's articles had the greatest influence.

Within the Boreal Forest zone of the Northwest Territories, the majority of the settlements are small with a population between 150 and 600 persons. On the basis of historical pattern of development and function, it would appear that these communities can be divided into several distinct groups. The purpose of this thesis is to study three settlements in order to determine empirically if there are fundamental differences between them and if such is the case to propose

¹ J.Fried, "Settlement Types in Northern Canada", Arctic, Vol. 16, No. 2, 1963, p. 93-100.

² Articles of importance to this study are:
Ronald Cohn, An Anthropological Survey of Communities in the Mackenzie-Slave Lake Region of Canada, N.C.R.C., Ottawa.
G.R. Rae, The Settlement of the Great Slave Lake Frontier, N.W.T., Canada--Eighteenth to Twentieth Century, Unpub. PhD. Thesis, University of McGill, 1950, p. 450.

I.M. Robinson, New Industrial Towns On Canada's Resource Frontier, University of Chicago, Department of Geography, Research Paper No. 73, 1962.

W.C. Wonders, "Post War Settlement Trends in the Mackenzie Valley Area, N.W.T.", Geografiska Annaler, Vol. 42, No. 4, 1960, pp. 333-338.

a broad classification for the types of settlements studied. Upon analysis of the settlements it was concluded that there are differences between the settlements. Subsequently, the proposed classification for the three types of communities was developed. The thesis does not put forward a classification to cover all types of settlement nor does it attempt to classify all the settlements in the Northwest Territories.

As indicated previously, the classification is based on the historical pattern of development and function of settlements. The three settlements studied and their proposed classification are: Fort Norman, a 'local service and administrative center'; Fort Franklin, a 'satellite settlement'; and Norman Wells, a 'company town'. These three settlements were chosen 'a priori' because they appeared to be different from one another. Also they were relatively accessible and were located within a relatively limited area and therefore could be easily reached during the limited research season at minimum expense.

The Scope and Method of Development

The thesis is an inquiry into the nature of the three types of settlement with the purpose of establishing the fundamental characteristics of each. However, before the settlements are studied in detail, an understanding of their relative locations, physical environments, history and the subsistence economy of the Indian and Metis residents is necessary. The first chapter establishes the location and physical environments of the settlements and discusses associated problems. The historical development of the region and of the settlements in particular is an important aspect of the classification and is discussed in Chapter II, while the subsistence economy of the Indians and Metis is summarized in Chapter III. The settlements of Fort Norman,

Fort Franklin, and Norman Wells are discussed in detail in Chapters IV, V, and VI respectively. The final chapter summarizes the fundamental characteristics of the three settlement types, compares and contrasts these characteristics and draws conclusions concerning the validity of this classification.

Each chapter concerning the three settlements has been developed on a basic pattern so that the three types of settlements can be compared. The basic organization includes a discussion of the settlement type and its relationship to the settlement being studied; a description of the site; an analysis of the population, labour force and employment, and income; a discussion of services and housing; a description of land-use in the settlement; a discussion of community organization and regional importance; and finally, a summary of the fundamental characteristics of the settlement.

Both library research and field surveys were used for all aspects of the thesis. The bulk of the information concerning the settlements and the subsistence economy of the Indians and Metis and much of the historical background was gathered through field survey, while much of the information on the physical environment was gathered through library research. Field research on the settlements was carried out during the summer of 1966 with the aid of a research grant from the Boreal Institute of the University of Alberta, Edmonton. Approximately one month was spent in each of the three settlements.

CHAPTER I

LOCATION AND PHYSICAL ENVIRONMENT

Location

The three settlements of Fort Norman, Fort Franklin, and Norman Wells are located in the northwestern Canadian sub-arctic. Fort Norman ($64^{\circ}54'N$; $125^{\circ}54'W$) is situated on the east bank of the Mackenzie River immediately upstream from its confluence with the Great Bear River which flows from Great Bear Lake. Fort Franklin ($65^{\circ}11'N$; $126^{\circ}26'W$) is at the head of Keith Arm, the southwesterly extension of Great Bear Lake, and is approximately 65 air miles east-northeast of Fort Norman. Norman Wells ($65^{\circ}18'N$; $126^{\circ}51'W$) is situated on the east bank of the Mackenzie River approximately 50 miles northwest of Fort Norman. The major air transportation center in the area, Norman Wells, is 1100 air miles north-northwest of Edmonton, Alberta.

Transportation costs to the settlements are high, as they are throughout much of the Northwest Territories. Three major factors effect these high costs and all are a result of the isolated location. First, great distances separate the communities from the major Canadian population and supply centers to the south. Second, because of a small and scattered population combined with generally low levels of economic activity only small volumes of traffic move into and within the territories. Even less traffic moves south. Therefore, it would be difficult to justify the need for such high capital, low operation

cost, year-round modes of transport as permanent roads and railroads into the Northwest Territories, except in special cases such as Pine Point.¹ Third, the seasonal nature of the transport systems, especially water transport, means higher costs to transport operators. These are reflected in higher rates to shippers. It also means that northern enterprises must carry higher inventories with increased costs in storage facilities, insurance and handling.

The three communities are serviced by air during most of the year and by barge on the Mackenzie River System during the ice-free shipping season. With the completion of the Canadian National Telecommunications landline along the Mackenzie River to Norman Wells in May, 1965, Fort Norman and Norman Wells have been provided with modern, up-to-date long distance telephone, telegraph and private line service to the 'outside'. Fort Franklin is yet to be provided with this service. The right-of-way cleared for the land line could be used as a winter road to service Fort Norman and Norman Wells, but has not been used as such yet.

The existence of an extensive inland waterway, the Mackenzie River System in the Northwest Territories, has resulted in heavy reliance on water transportation. Although water transport rates are low compared to air transport rates, the usefulness of the waterway is reduced because of the seasonality of the operation. Generally, the shipping season for the entire system opens early in June, and

¹ The Great Slave Lake Railway was built to Hay River and Pine Point partly to develop the rich lead and zinc deposits of the area. Trains bringing freight to the Territories were guaranteed out-shipments from the Territories in the form of lead and zinc concentrates on the return haul.

freeze-up, which marks the end of the shipping season, occurs in early October.²

The Northern Transportation Company, a Crown owned corporation, is the only commercial carrier on the Mackenzie waterway. Service to the settlements is provided from railhead at Waterways, Alberta and Hay River, Northwest Territories. Hay River also is the terminus of freight shipped by truck from the south and destined for communities along the river system. Hay River handled 75 per cent of the freight destined for northern locations in 1965.³

Table I shows the distance and cost per unit weight of goods shipped from Edmonton.⁴

TABLE I - WATER, RAIL AND ROAD TRANSPORTATION COSTS, 1966.⁵

Source-Destination	Method of Transportation	Distance (miles)	Cost (\$/ton)
1. Edmonton-Waterways	rail	305	26.80 ⁶
Waterways-Fort Norman	barge	1120	46.00
Waterways-Fort Franklin	barge	1210	75.00
Waterways-Norman Wells	barge	1170	48.00
2. Edmonton -Hay River	rail	706	26.40 ⁷
Hay River-Fort Norman	barge	538	26.00
Hay River-Fort Franklin	barge	628	63.80
Hay River-Norman Wells	barge	588	26.00
3. Edmonton-Hay River	truck	707	67.90

² J.C. Wallace, Hay River, N.W.T., unpublished M.A. thesis, University of Alberta, Edmonton, 1966, p.10.

³ Ibid., p.61.

⁴ Ibid., p.102.

⁵ Cost varies with the type of commodity and the size of the shipment.

⁶ Pers. Comm., Northern Alberta Railways, Northern Transportation Company Ltd., Byers Transport and Grimshaw Trucking, Edmonton.

⁷ Freight can only be shipped in car load lots on the Great Slave Lake Railway.

The shipping rates by barge from Hay River to Fort Franklin are more than double those to Fort Norman and Norman Wells. The higher rates are the result of increased handling of freight because goods destined for points on Great Bear Lake must be transferred from large Mackenzie River barges to smaller barges which operate on the Great Bear River. Also, the freight must be unloaded and portaged around the St. Charles rapids which are mid-way up the Great Bear River and then reloaded above the rapids.

Air transport is very important to the three communities. The lack of year-round surface transport and the vast distances separating the settlements from the 'outside' are the two basic reasons for its importance. Air transport is particularly significant with regard to low-weight, high-value goods and materials that are urgently required. Virtually the only means by which people can get to the settlements is by air, except by private boat along the Mackenzie waterway.

Pacific Western Airlines has four DC6 flights a week between Edmonton and Inuvik via Fort Smith, Yellowknife and Norman Wells. Fort Norman and Fort Franklin are connected to Norman Wells by a weekly scheduled flight operated by Northward Aviation. An Otter aircraft equipped with floats in summer and skis in winter provides service to Fort Norman and Fort Franklin. During fall freeze-up and spring break-up this service is interrupted and the two settlements are isolated. Northward Aviation, based in Norman Wells, also provides charter service for the area. Charter service from 'outside' to the three settlements is provided by a number of companies.

Table II shows passenger, charter and freight rates by air.

Figure 1

LOCATION OF THE SETTLEMENTS AND TRANSPORTATION

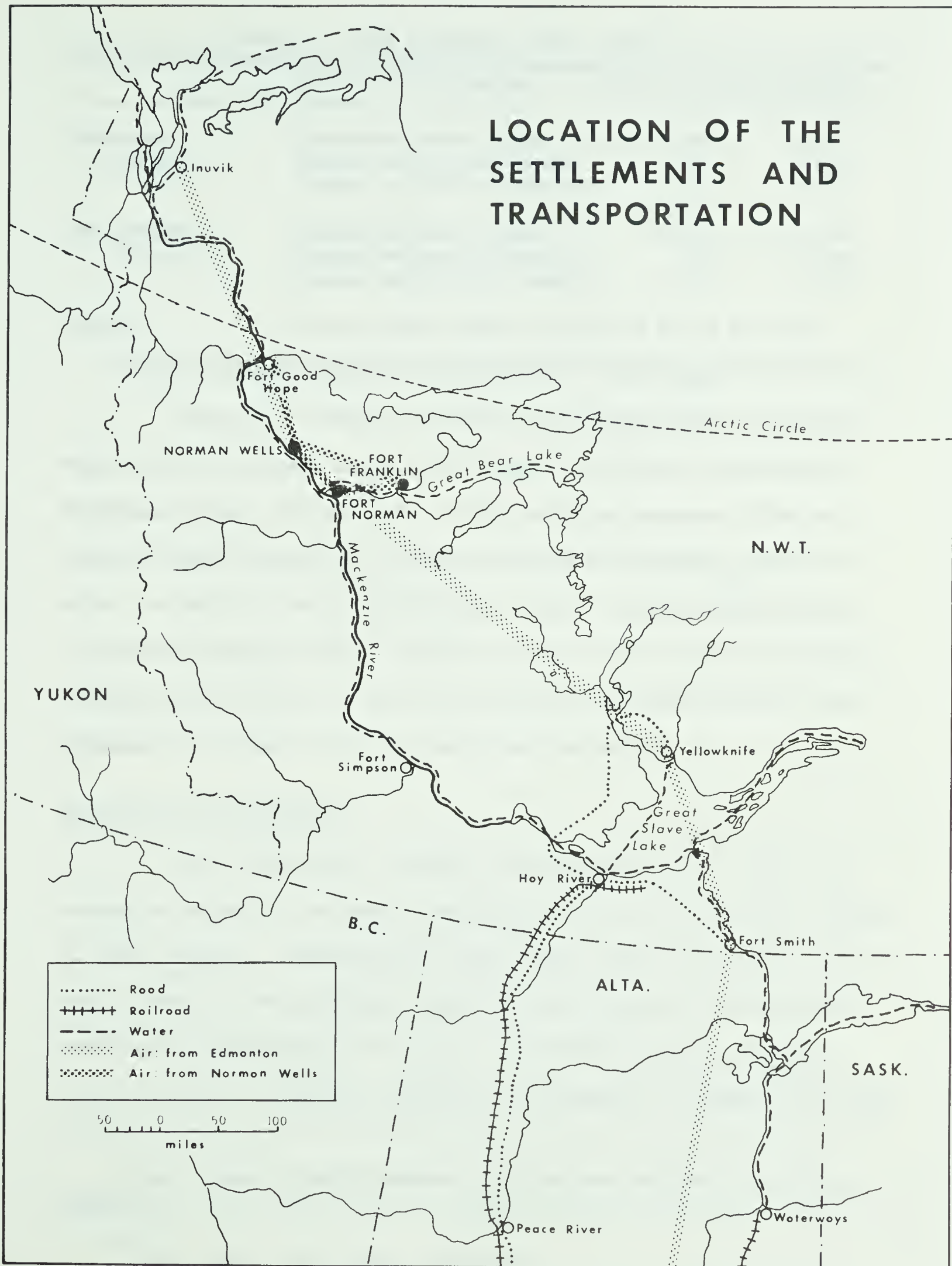


TABLE II - AIR TRANSPORT COSTS, 1966.⁸

	Source - Destination	Distance(miles)	Cost(\$)
Passenger (single)	Edmonton-Norman Wells	1100	105.00
	Norman Wells-Fort Norman	50	11.00
	Norman Wells-Fort Franklin	115	27.50
Air Freight (c.w.t.)	Edmonton-Norman Wells	1100	25.00
	Norman Wells-Fort Norman	50	6.00
	Norman Wells-Fort Franklin	115	12.00
Charter	Norman Wells (Otter aircraft)* \$1.00 per mile		

*Otter aircraft-capacity 11 persons or 1 ton freight

Generally, northern air fares and freight rates are higher than those in southern Canada. For example, the fare from Edmonton to Norman Wells, 1100 air miles is 9.5 cents per passenger mile and the Air Canada economy fare between Montreal and Winnipeg, 1029 air miles, is only 6.1 cents per passenger mile. The same comparison may be made for freight rates. To ship a ton of air freight from Edmonton to Norman Wells cost 45.5 cents per ton mile and between Montreal and Winnipeg air freight costs 23.9 cents per ton mile.⁹

Geology and Physiography

Fort Norman, Fort Franklin and Norman Wells lie within the Mackenzie Lowland, a northward continuation of the Great Central Plains of North America. Extending from Great Slave Lake in the south to the Arctic Ocean in the north and bounded by the Canadian Shield on the east and the Cordillera on the west, the Lowland consists of gently tilted Paleozoic sediments resting on a Pre-cambrian basement and forms

⁸ Pers. Comm., Pacific Western Airlines and Northward Aviation, Edmonton.

⁹ Pers. Comm., Air Canada, Edmonton.

a rolling lowland sloping northward at two feet per mile.¹⁰

The Mackenzie Lowland is roughly divided by the Franklin Mountains, part of the Cordillera system, and the Horn Mountains into the Mackenzie River Valley, through which the Mackenzie River flows, and the Mackenzie Lowland proper. Norman Wells and Fort Norman lie within the Mackenzie Valley, while Fort Franklin is located on the Lowland.

The Mackenzie Lowland proper, that is the larger physiographic subdivision east of the Franklin Mountains, has developed on essentially horizontal sedimentary rocks which include considerable quantities of limestone. These rocks are all Paleozoic or later in age and are relatively weak. Some of the rocks of the region may be very young.¹¹

The Lowland is made up of a low-lying depression extending from Great Slave Lake northward to Great Bear Lake. North and northeast of Great Bear Lake there is a relatively low divide separating the waters of Great Bear Lake from those flowing into the Arctic Ocean.

The Franklin Mountains, an outlier of the Mackenzie Mountain System, are an elevated and broken tract of country more than 400 miles long and as much as thirty miles wide, extending from the mouth of the North Nahanni River to Fort Good Hope. Several close folds which lie 'en echelon' with arcuate features, convex to the northeast form the four mountain ranges that make up this system.

The Norman Range, the most northerly range of the Franklin Mountains, rises to an elevation of 2550 feet above the Mackenzie River

¹⁰ C. Camsell and W. Malcom, The Mackenzie River Basin, Geological Survey Memoir-108, Department of Mines and Technical Surveys, Ottawa, 1919, 150p.

¹¹ Department of Geography, McGill University, A Report On The Physical Environment of the Great Bear River Area, N.W.T., Canada, Rand Corporation, Santa Monica, California, 1963, p. 105.

and is composed of westward-dipping series of rocks of Silurian and Devonian Age. The range east of Norman Wells is the west half of a huge anticline, the axis of which has been eroded as to leave a deep valley to the east, and very abrupt eastward-facing cliffs on the range itself.¹² The Range extends from Fort Good Hope to the north side of the Great Bear River in the vicinity Fort Norman.

The McConnell Range, which joins the southeast flank of the Norman Range, has a more complex structure and faults are known, but as the range crosses the Great Bear River and begins to trend southeasterly parallel to the Mackenzie River the structure becomes simpler. At its southern extremity the range is a plunging anticline.¹³ Rapids occur at the point where the Great Bear River cuts through the McConnell Range. It is around these rapids, the St. Charles Rapids, that barge traffic on the river must be portaged.

The Mackenzie Plain is a long area of relatively low elevation and relief compared with the ranges on either side, and broadly can be described as a valley. It appears to be a strip of the Interior Plains left almost undisturbed within the Mackenzie Mountain area when the front structures emerged from the plains far out in front of the main area of deformation.¹⁴ The plain is approximately sixty miles wide

¹² G.S. Hume, Geology of the Norman Oilfields, Geological Survey Summary Report, 1922, Department of Mines and Technical Surveys, Ottawa, 1923, p. 59.

¹³ C.S. Lord, Mineral Industries of the Northwest Territories, 1951, Geological Survey Memoir 261, Department of Mines and Technical Surveys, Ottawa, 1951, p. 45.

¹⁴ H.S. Bostock, Physiography of the Canadian Cordillera, With Special Reference to the Area North of the 55th Parallel, Geological Survey Memoir 247, Department of Mines and Resources, Ottawa, 1948, p. 17.

immediately south of the Great Bear River and narrows to the north and south, being thirty miles wide when it joins the Mackenzie Lowland proper. The area of interest is the 'Norman Basin' and "...may be considered to extend along the Mackenzie River from 100 miles south of Fort Norman to the Mackenzie Ramparts, a total distance of not less than 250 miles."¹⁵

Much of the Norman Basin consists of flat lying or gently folded Cretaceous and Tertiary strata through which Palaeozoic rocks project to form the chief elevations and irregularities.¹⁶ Perhaps one of the most well known of these irregularities is Bear Rock, which rises 1200 feet above the surrounding plain, five miles north of Fort Norman.

Tertiary beds occur at the mouth of the Bear River and occupy a basin about thirty to forty miles in length and twenty to thirty miles in breadth. The deposits, which consist largely of discordant bedded sand, sand clay, clays and gravel have a minimum thickness of 600 feet.¹⁷

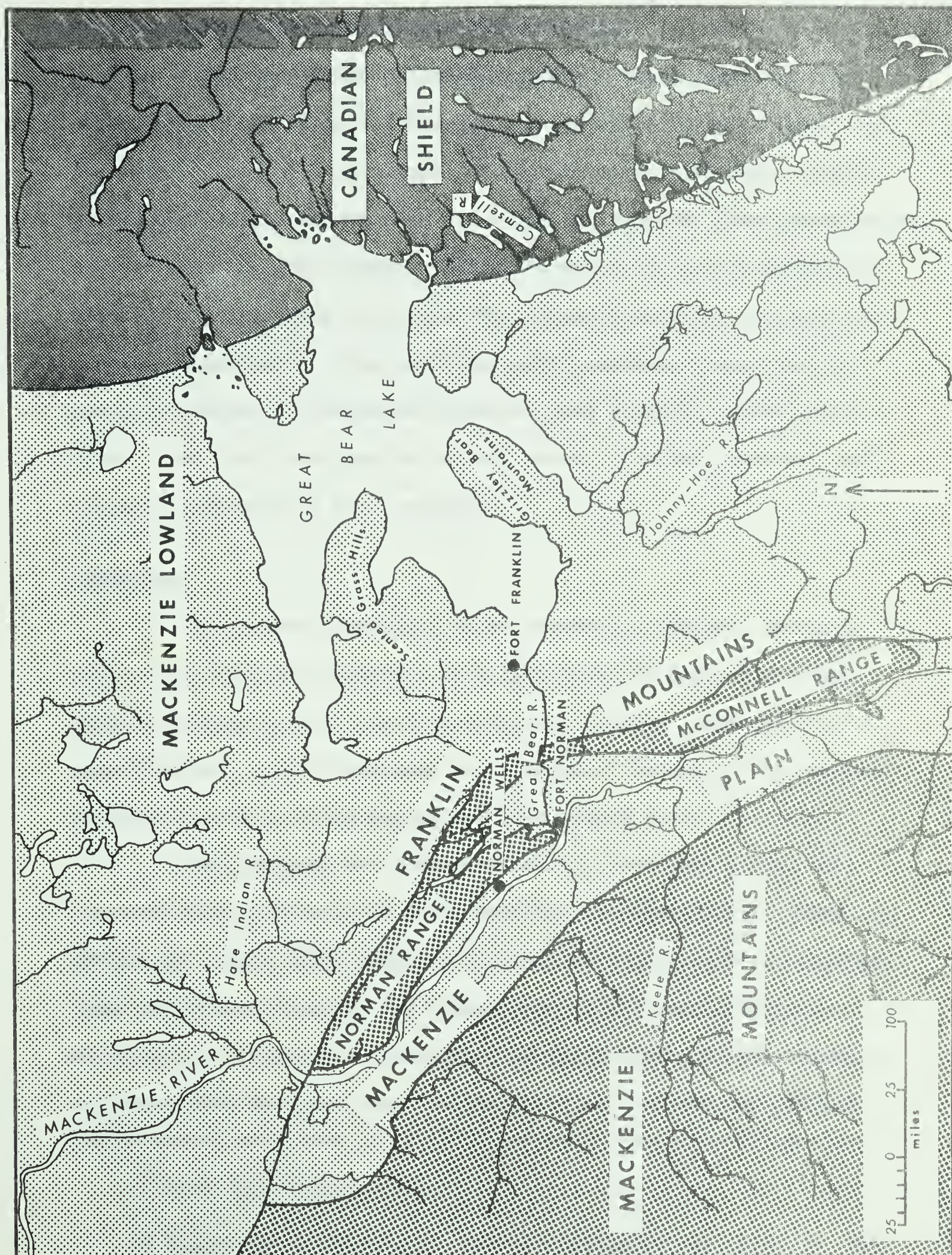
In the Norman Wells area the basin is broken into northwesterly trending, gently arcuate, anticlinal ridges with small faults. The folds are about parallel with the Norman Range and in some cases may be extensions of the folds of that range. The low ridges expose mainly Palaeozoic formations and between the ridges are basins of mainly

¹⁵ North Pacific Planning Project, Canada's New Northwest, Ottawa, 1948, p. 37.

¹⁶ Bostock, op. cit., p. 19.

¹⁷ Camsell and Malcom, op. cit., p. 81.

PHYSIOGRAPHIC DIVISIONS



Cretaceous, but including some Tertiary strata.¹⁸

At Norman Wells oil is drawn from a coral limestone reef sealed between an upper and lower shale series of Devonian Age. The reef is contacted at a depth of approximately 1500 feet. Sandstones and shales outcrop near the wells, overlie the Fort Creek shales, and are also of Upper Devonian Age. The wells are on the southwest flank of the anticline that forms the Norman Mountains, to the northeast of Norman Wells. The beds dip gently southwest near the wells and pass beneath the Mackenzie River to form a syncline west of the river. The Fort Creek shales outcrop about 1.5 miles northeast and 23 miles southwest of the community.

Landscape

The present landscape of the Mackenzie Lowland, the area east of the Franklin Mountains, has resulted from bedrock geology, pre-Pleistocene erosion and Pleistocene glaciation. Whereas the major features of the landscape are preglacial in origin, the detail probably has been formed during the last 10,000 years.¹⁹

The Lowlands are characterized by broad open plains that frequently are covered with thick deposits of glacial till. They are poorly drained with numerous shallow lakes and marshes. The flat areas are often broken by low scarps where more resistant strata outcrop at the surface. Flat-topped plateaus rising to elevations of almost 2000 feet are found on the plain and include the Scented

¹⁸ Lord, op. cit., p. 45.

¹⁹ Department of Geography, McGill University, op. cit., p. 105.

Grass Hills northwest of Keith Arm, and Grizzly Bear Mountain, between Keith and McVicar Arms of Great Bear Lake. These plateaus survive as erosional remnants.²⁰ The larger erosional depressions form lakes, the western part of Great Bear Lake being a good example.

The Mackenzie Valley landscape is largely the result of bedrock geology, Pleistocene glaciation and erosion by running water.

"The main part of the Mackenzie Plain was covered by ice during Pleistocene time.... North of the North Nahani River the ice pushed northwesterly across the plain against the Mackenzie Mountains and into their valleys, and Northward to the Arctic leaving abundant evidence of their passage²¹ in characteristic topographic forms and glacial deposits."

The Mackenzie Plain is characterized by a rolling surface dissected by the valleys of the main streams that flow through it. The surface slopes prevailingly from the mountains to the east and west down to the Mackenzie River. General evenness of the surface is varied by low parallel hills and valleys in the northern part, and locally by small plateaus, rounded hills and east facing scarps. Depressions generally are filled with water forming small lakes or swamps. Much of the area of very shallow depressions and low relief is organic terrain, more commonly known as muskeg.

The Mackenzie River is entrenched from 200 to 500 feet below the general surface of the plain and the river valley varies from one to four miles in width. The decrease in elevation from the general surface of the plain to the river valley takes place within a distance of one to two miles. Tributaries of the river are entrenched in narrow steep-sided valleys 200 to 500 feet below the general surface of the plain.²²

²⁰ Ibid., p. 115.

²¹ Bostock, op. cit., p. 19.

²² Ibid., p. 19.

The main river and notably the tributaries from the west occupy most of their valley floors, except for the islands in them and narrow flats on one side or the other.

Climate

The climate of the area is severe continental, or Dfc in the Koppen classification. Characteristically, the area has long, cold winters, short transition seasons, and a brief cool summer. One of the striking features of the area is the extreme length of day in summer and of night in winter.

TABLE III - DURATION OF SEASONS, FORT NORMAN²³

Season ²⁴	Period	Days of Duration
Winter (including cold winter)	-early Oct. to mid-May	210
Cold Winter	-mid Nov. to late March	188
Spring	-mid May to early June	15
Summer (including warm summer)	-early June to early Sept.	118
Warm Summer	-	29
Autumn	-September	22

Temperature averages are -18.6°F and -18.7°F in January and 59.9°F and 60.7°F in July for Fort Norman and Norman Wells respectively. During long, sunny summer days, temperatures in the 80's are not

²³W.G. Kendrew and B.W. Currie, The Climate of Central Canada, Ottawa, 1955, p. 77.

²⁴Cold winter--Mean daily temperature below 0°F .
 Winter--Mean daily temperature between 0°F and 32°F .
 Spring--Mean daily temperature between 32°F and 42°F .
 Summer--Mean daily temperature between 42°F and 70°F .
 Warm summer--Mean daily maximum above 77°F .
Ibid., p. 19.

uncommon in the Mackenzie Valley. Precipitation is usually slight. The annual averages for Fort Norman and Norman Wells are 11.22 inches and 12.70 inches respectively. Most of this falls during the four month period of June to September. Approximately 36 per cent of the precipitation falls in the form of snow and the annual average at Norman Wells is 46.7 inches and 40.3 inches at Fort Norman.²⁵

Weather conditions are characteristically very stable during the winter and somewhat less so in the summer. An anticyclone settles over the area to stabilize weather conditions during the winter. At this time the weather is clear and fairly calm and at most times very cold. In summer, when the anticyclone weakens and migrates north, moisture is evaporated in larger amounts, the atmosphere becomes less stable, and occasional frontal depressions moving southeast pass over the area. These frontal depressions often bring cool damp weather with them.

A more detailed tabulation of climatic data is shown in Appendix I, as well as a discussion concerning the climate of Fort Franklin.

The variety of vegetables and other plants which can be grown in the area is limited by the severe climate. Degree days above 42°F²⁶ are sufficient to permit growth of most hardy types of garden vegetables. There are 1452 degree days above 42°F at Norman Wells and 1381 at Fort Norman. Also the frost-free period at Norman Wells (91 days) is long

²⁵ See Appendix I

²⁶ It is generally considered that plant growth takes place above 42°F. Degree days are the number of days with a mean daily temperature above 42°F multiplied by the total number of degrees above 42°F.

enough to allow plant growth, but a frost-free period of only 46 days is a severe handicap at Fort Norman.²⁷ The growing season at Fort Franklin is probably much less than that of the Mackenzie Valley settlements. Degree days over 42°F are probably not much over 1000 and the frost-free period is probably in the neighbourhood of 60 days.²⁸ In the summer of 1966 there were no gardens in Fort Franklin. Limited precipitation in the area necessitates hand watering of kitchen gardens. Long hours of sunlight during the summer enable many vegetables to mature in a shorter period of time than they do further south.

Perhaps one of the most important considerations of climate in the area, as it is throughout the North in general, is the increased cost of winter heating and the more expensive building methods and materials needed to combat the cold. Both Norman Wells and Fort Norman have 16,132 fuel consumption degree days.²⁹ Bourne points out that in Yellowknife (15,500 fuel consumption degree days) the increase in heating costs may as much as 50 per cent above those in

²⁷ The difference in the length of frost-free period within such a short distance could be related to air drainage with respect to the location of the settlements and the location of the meteorological instruments within the settlements.

²⁸ Since climatic data for Fort Franklin are not available, these figures have been arrived at by comparing the climatic data of Port Radium on the east side of Great Bear Lake and that of Fort Norman and of Norman Wells. Also the moderating effect of the lake has been taken into account especially with regard to the frost-free season.

²⁹ Heating is considered necessary below 65°F. Fuel consumption degree days are the number of days with a mean daily temperature below 65°F multiplied by the total number of degrees below 65°F.

Edmonton (10,300 fuel consumption degree days³⁰). It could be expected that the cost of heating in this area would be at least as high as that in Yellowknife.

The seasonal ice cycle, an important side effect of the climate, restricts water transportation for the three settlements and affects air transportation to Forts Norman and Franklin. The average navigation season on the Mackenzie River System is generally slightly less than four months in duration. Although the ice generally breaks up on the Mackenzie in the vicinity of Norman Wells and Fort Norman between May 15 and May 17, barges are unable to move out from Hay River until June 10 when the ice on Great Slave Lake breaks up. A similar break-up pattern occurs on the Great Bear River and Lake but break-up occurs later. The Great Bear River ice generally begins to break up towards the end of May while the lake ice breaks up in late June. However, barges may reach Fort Franklin, near the outlet of the Bear River, in early July. Although the lakes and rivers may not freeze completely until December, the end of the shipping season is usually October 5 when ice forms in bays and prevents further navigation.^{31,32}

As was mentioned earlier, air transport to Forts Norman and Franklin is interrupted for approximately six weeks each year, three weeks during spring break-up and three weeks during fall freeze-up.

³⁰ L.S. Bourne, Yellowknife, N.W.T., A Study of its Urban and Regional Economy, Northern Coordination and Research Center, Department of Northern Affairs and National Resources, Ottawa, 1963, p. 20.

³¹ W.T.R. Allen, Break-Up and Freeze-Up Dates in Canada, Meteorological Branch, Department of Transport, Ottawa, 1964, pp. 65, 114.

³² Trevor Lloyd, "The Mackenzie Waterway: A Northern Supply Route", Geographical Review, Vol. 33, 1943, pp. 415-43.

The settlements are effectively isolated for this period.

Biogeography--Soil³³, Vegetation, and Fauna

From the viewpoint of physiography and age there are two major divisions of soils in this area that can be made. They are the lowland or recent soils and the upland or older soils.³⁴

The great bulk of 'river bottom land' soils is of intermediate texture, ranging from fine sandy loams to silt loams. Generally speaking these are azonal soils except they tend to become coarser with depth. In colour the river bottom soils vary from brownish grey to dark grey. Both surface and subsoil are usually fairly well supplied with organic matter. In most locations they are fertile soils and easy to cultivate.

The 'upland' soils vary in nature within the region depending on their origin. Therefore, there are alluvial soils, lacustrine soils and glacial till soils, varying in texture from sands to clays. These are immature soils and show little sign of profile development. Although the soil is covered by a mat of organic material, there is little organic matter in the soil itself. Soil fertility is generally lower than that of the river bottom lands.

Perhaps one of the most important factors concerning soils in the area is the effect of permanently frozen subsoil. Frozen subsoil prevents drainage through the soils, thus greatly retarding or preventing any leaching and increasing the amount of poorly drained land.

³³ Information concerning the nature, distribution, and extent of various soil types in the Mackenzie Basin is limited. An exploratory soil survey carried out by A. Leahy along the water route from Waterways to Aklavik is virtually the only comprehensive survey of the area. It is upon this survey that the following section on soil is based.

³⁴ A. Leahy, cited by: C.A. Dawson (ed.), The New Northwest, Toronto, 1947, pp. 162-66.

Poorly drained areas almost always become swamps or muskeg. Therefore, in the area under discussion a high percentage of the total surface area is swamp and organic terrain or muskeg.

The area forms part of the Boreal forest and is well covered with vegetation although trees are generally smaller and more sparse than in areas further south. Distributions of vegetative types are largely controlled by site conditions and nature of the soil.

In the Mackenzie Valley area the coniferous forest is composed mainly of white and black spruce. White spruce generally occupies the higher ground and better drained sites while a black spruce-tamarack (larch) association tends to dominate the lower, poorly drained sites of the muskeg and bogs. Alder and willow are also found in the poorly drained sites. Along the Mackenzie River aspen, poplar, and birch are indicative of good soils.³⁵ Mosses in mats several inches thick are found at ground level.

In the Fort Franklin area the forest tends to be less luxuriant; that is, trees are smaller and stands are less dense than along the Mackenzie River. A black spruce-tamarack association is found throughout the area and in the numerous open areas grasses, mosses and lichens are found. Tree growth tends to take place on more poorly drained sites. On the better drained sand and gravel ridges there is less tree growth and an increased proportion of lower plants. Within the open forest there is an undergrowth of alder and in the more poorly drained areas, willow scrub.

On both the banks and alluvial islands along the Mackenzie there

³⁵ J.L. Robinson, Land-Use Possibilities In The Mackenzie District, N.W.T., Can. Geogr. Journal, Vol. 31, No. 1, July 1945, p. 33.

are some small patches of merchantable timber, which are sufficient for local use. The sparse forest provides wood for the use of the natives and trappers, but its chief value is that it provides a habitat for wildlife.

The animals which inhabit the Boreal Forest are an important part of the environment for it is upon these animals that the subsistence economy of the Indians and Metis of the area is based. These animals will be discussed in Chapter III, which deals with the subsistence economy.

Permafrost

The three settlements are located near the boundary of the continuous permafrost zone of northern Canada and the occurrence of permafrost is very widespread in the area.³⁶ Permafrost is the state of the earth's crust where the ground temperature is below 32°F for a long period of time. Lying above the permafrost is what is known as the 'active layer'. This is the layer of ground which freezes and thaws according to the season. The depth of the active layer varies with locality, insulating vegetation cover, type of soil, amount and movement of water in the area, and degree of exposure to direct sunlight.³⁷

Building in permafrost areas presents problems resulting in increased construction costs which are not encountered in more temperate regions. Basically, these problems arise from the thawing of ground beneath structures, the freezing and thawing of the active

³⁶R.J.E. Brown, "The Distribution of Permafrost and Its Relation to Air Temperature in Canada and the U.S.S.R.", Arctic, Vol. 13, Sept. 1960, pp. 163-177.

³⁷A.V. Raison, "Problems Associated with Construction Over Permafrost", Roads and Engineering Construction, Vol. 97, No. 1, January 1959, p. 29.

layer, the excess water content in the thawed soil due to poor drainage and the nature of the surficial materials present in the active layer. These problems are overcome to some extent by choosing the best possible site for construction and using piles and gravel pads. As in Norman Wells, utilities such as steam, water and sewer lines may be housed in 'utilidors' insulated boxes on the surface or above the general level of the ground.

Summary

Relative location and physical environment place certain limitations on the three settlements. Because of the vast distances separating the communities from the more densely settled areas of Canada and the lack of a cheap, year-round mode of transportation, the cost of bringing materials to the communities is high. The bulk of the goods received in the settlements are shipped by barge on the Mackenzie River waterway during the summer, while low weight, high value items or urgently needed materials are flown in by aircraft at all seasons of the year. The physical environment and especially the effects of the severe climate place further handicaps on the settlements. Increased cost of heating, limited growing season for agricultural production, the limited amount of merchantable timber and the presence of permafrost and its associated problems are all functions of the severe climate. The location and physical environment has in the past and will continue to affect the three settlements in the future.

CHAPTER II

HISTORICAL BACKGROUND

The nature and functions of the present settlements are a result of their own historical development as well as of the overall changes which took place throughout the history of the Northwest Territories. The search for new fur-trading territory led to the exploration and settlement of the region. The expansion of the fur trade in the early part of the twentieth century and later the development of mining had far-reaching effects, not only by producing new communities but also on the older settlements. Government activity was increased in the Northwest Territories in the twentieth century and especially after World War II for two major reasons: first, there was extensive social legislation being passed in the rest of Canada; and second, the large number of whites entering the region from the south in the 1930s and post World War II demanded services similar to those they had been used to. This increased government activity resulted in the establishment of Royal Canadian Mounted Police detachments schools, hospitals or nursing stations, and Indian Agencies in most settlements.

Native Indians--Before European Contact

The aboriginal populations which inhabited the Great Bear Lake and Mackenzie Valley belong to the Athapaskan linguistic group. Movements of Indian groups previous to and after white contact make it difficult to locate the exact range of various native bands. From the information available, the Great Bear Lake area appears to have been the division between several tribal groups. The area was occupied by Dogribs to the south of Great Bear Lake, Yellowknives to the east and south-east, Slaves in the Mackenzie Valley extending from the west shore of Great Slave Lake to Fort Norman and Hares north of Fort Norman and northwest of Great Bear Lake.¹ Osgood² believes that a separate group, which he called 'satudene', occupied the Great Bear Lake region. This is a hybrid group, which is probably more closely related to the Hares than to any other tribe.

The pre-European Indian population was probably much larger than it is today (refer to Table III). This smaller population is the result of diseases introduced by the whites such as influenza, colds, measles, small pox and more recently tuberculosis. The natives had little or no resistance to these, so that many of their groups suffered severe losses of population.

¹ Diamond Jenness, The Indians of Canada, Ottawa, 1963, pp. 377-96.

² C. Osgood, The Ethnography of the Great Bear Lake Indians, National Museum of Canada, Annual Report, 1931, Bulletin No. 70, pp. 31-92.

TABLE IV - NATIVE INDIAN POPULATIONS OF THE NORTHWEST TERRITORIES³

Tribe	Pre-Contact Population	Population 1963
Yellowknife	430	150
Slave	1250	800
Dogrib	1250	750
Hare	750	750

These woodland people of the MacKenzie River system had a simple hunting, fishing and gathering culture. Each band was a loosely consolidated unit and occupied a distinct area. Only a small part of this area was utilized at any particular time. Their economy was based on caribou, both 'woodland' and 'barren ground', moose, small game, birds, fish and berries. Although most groups preferred meat they relied heavily on the fish resources of the area. The seasonal variety and regional location of the food supply kept the Indian bands in constant motion. This need for mobility kept the material culture to a minimum. Their dwellings were rectangular huts of poles and brush with gabled roofs in winter and conical tipis covered with caribou hide or spruce bark or simple lean-tos in summer. Every family possessed a canoe, nearly always made of spruce bark, because birch bark of sufficient size was seldom available. The 'Mountain Indians', ie. those Indians who lived in the Mackenzie Mountains to the west of Fort Norman, covered their boats with moose hide instead of bark. In winter the canoes were replaced by snow shoes and toboggans. Although the aboriginal Indians

³ Jenness, op. cit., pp. 377-96.

had dogs, they were only used for hunting. The women and girls pulled the toboggans.^{4,5}

With the coming of the European, the Indian pattern of existence was changed radically. The rifle and steel trap replaced the bow and arrow and snare; the natives became more efficient hunters. Trapping and selling of furs in exchange for 'whiteman's goods' dominated the native economy. There was tendency to congregate in the neighbourhood of the fur trading posts and there was an increasing dependence upon flour, beans, bacon, and other imported foods instead of the vagaries of hunting and fishing.

Fur Traders and Missionaries 1800-1920

In the summer of 1789, Alexander Mackenzie, employed by the Northwest Company, made his historic trip down the Mackenzie River to the Arctic Ocean. Although it was a personal disappointment to Mackenzie, the explorer, it opened a new area for the fur trade. By 1800, there were only two trading posts on the Mackenzie River System north of Great Slave Lake. They were Rocky Mountain Fort on the right bank of the Mackenzie River at Camsell Bend opposite the mouth of the North Nahanni River, and another at the outlet of Great Bear Lake which was the site later occupied by Fort Franklin.⁶ These two posts were established by the Northwest Company and handled the fur trade north of Great Slave Lake.

⁴ Loc. cit.

⁵ Osgood, op. cit., pp. 31-92.

⁶ John K. Stager, Fur Trading Posts in the Mackenzie Region up to 1850, B.C. Division, Canadian Association of Geographers, Occasional Papers in Geography, No. 3, Vancouver, 1962, p. 29.

During the first twenty-one years of the nineteenth century a fierce competition developed between the fur trading companies in the Mackenzie Valley. First, competition developed between the XY Company and the Northwest Company until 1804 when the former company was absorbed by the Northwest Company and second, between the Northwest Company and the Hudson's Bay Company. During this period of rivalry many forts were established and locations of these forts changed often. Three posts were founded during this period that survive to the present day. They are Fort Simpson, Fort Norman and Fort Good Hope.

The locations of trading posts were determined by two factors other than competition. First, their strategic locations opened the way to new regions and second, the local area had good resource possibilities, chiefly hunting, fishing and trapping. For example, good fishing sites were often frequented by Indians and were thus centers where they would assemble in summer and bring in their winter's fur catch. Good fisheries led to the establishment of the fort at the outlet of Great Bear Lake (1799-1815) and later (1825-1827) the establishment of Fort Franklin by Warren Dease of the Hudson's Bay Company as a base camp for Sir John Franklin's second Arctic Expedition (1825-1827).⁷ Fort Norman, established in 1804⁸ by the Northwest Company, occupied a strategic position at the confluence of the Mackenzie and Great Bear Rivers.

After the amalgamation of the two companies in 1821, the governor of the new company, Sir George Simpson, set out to reorganize

⁷ M.J. and J.L. Robinson, "Exploration and Settlement of the Mackenzie River District, N.W.T.", Canadian Geographic Journal, Vol. 32, No. 6, July, 1956, p. 250.

⁸ Stager, op. cit., p. 40.

the fur trade of the Mackenzie Valley. Forts were moved to the most economic location. Fort Norman was relocated on the west side of the Mackenzie, thirty miles up-stream from the mouth of the Great Bear River in 1823 and in 1851 it was moved to its present location.⁹

In addition to the relocating of the forts, the company initiated the use of 'York Boats' in 1823.¹⁰ The York boat, which could handle more freight, replaced the canoe as the freight vessel on the Mackenzie River system.

By 1852, the fur trade had established itself along the Mackenzie and the only white residents in the region were those directly involved with it.

"From the early vision of Peter Pond until the firm concepts and controls of Governor Simpson, the Mackenzie Basin had passed from exploration to violent competition that lasted in varying degrees until 1821. In the next 30 years by trial and error the fur trade adjusted its organization to the resources of the region and settled into a pattern of posts that remains essentially the same."¹¹

During this period Fort Norman, which was comparatively a small trading post, was not an important regional transportation or supply center.¹² Its only function was the trade in furs, consequently the morphology of the settlement was relatively simple. The smaller posts were usually just one log building in which lived the trader and perhaps one or two assistants.¹³ In the early spring

⁹ Ibid., p. 30.

¹⁰ Ibid., p. 42.

¹¹ Ibid., p. 43.

¹² Fort Simpson was the regional transportation and supply center.

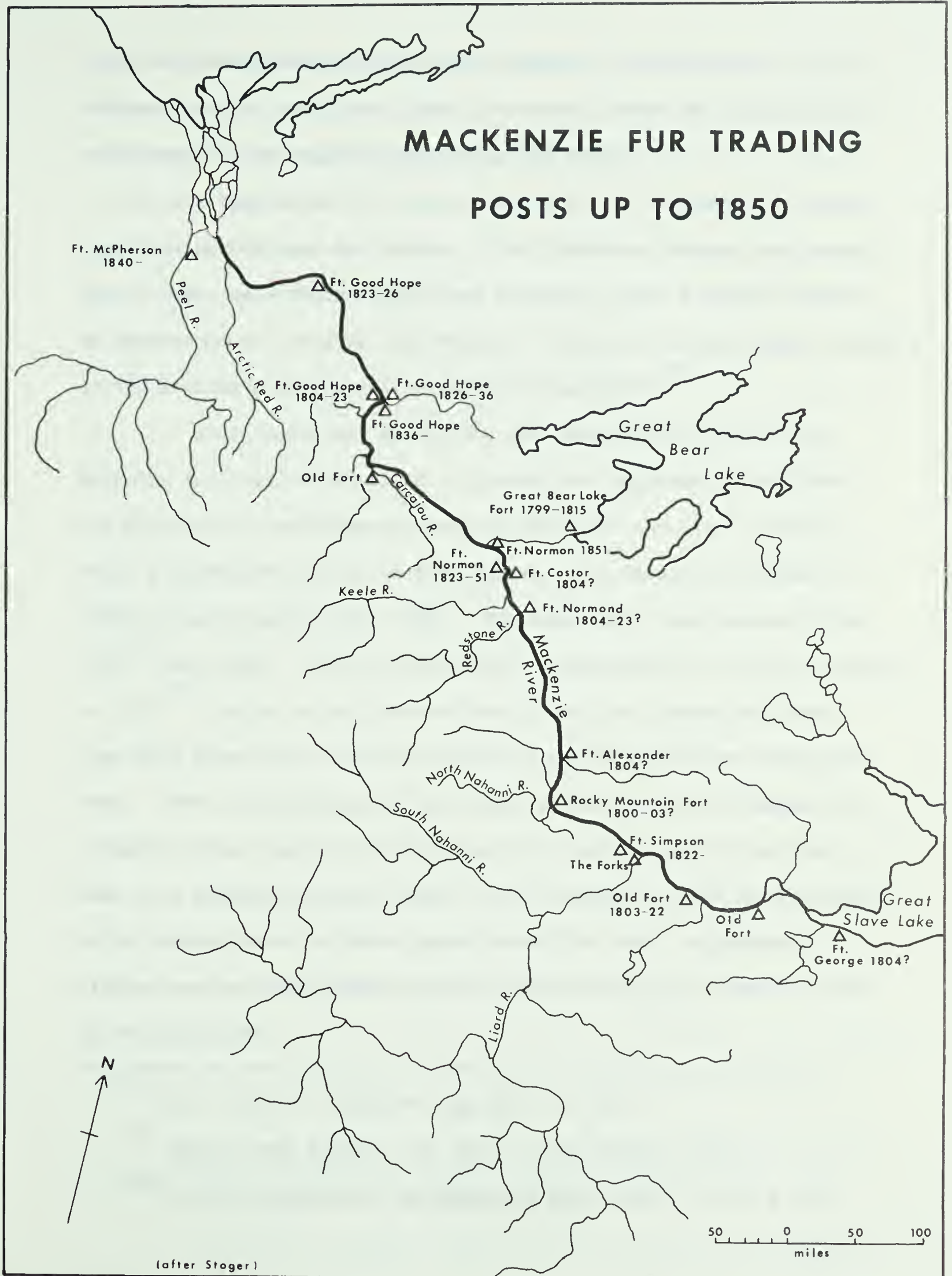
¹³ H.A. Innis, The Fur Trade in Canada, Toronto, 1962, p. 283-338.

The York boat was a flat bottom row boat commonly 40 feet by 10 feet amidships, pointed at both ends, having a small sail and steered by a large oar was manned by 8 to 15 men.

Figure III

MACKENZIE FUR TRADING

POSTS UP TO 1850



until mid-summer every trading post underwent a metamorphosis. The Indians from the local area came in to trade before the spring thaw, and stayed in the neighbourhood until mid-summer.

As was typical of the pioneer settlement of northwestern Canada, missionaries followed the traders. Their mission churches and houses, and in some cases their schools and hospitals, gave a greater degree of permanency to the post settlements. The period of missionary activity in the Mackenzie Valley was between 1852 and 1900.¹⁴

Fort Norman was one of the few settlements to have both Catholic and Anglican Missions. Although the Anglicans established few missions in the Mackenzie Valley, they were the first group to build a permanent mission in Fort Norman. The mission was built in 1866 and was occupied until 1868. Subsequently it was reoccupied in 1876¹⁵ until 1944. Father Ducot O.M.I. established the Catholic mission in 1876.¹⁶ Prior to this the natives of the Fort Norman and Great Bear Lake areas were visited by Catholic missionaries from Fort Good Hope. After the founding of the Catholic mission in Fort Norman the resident priest looked after the spiritual well being of the Great Bear Lake Indians when they came to Fort Norman to trade in the spring or by making visits to their camps around the lake. A permanent mission was not established at Fort Franklin until 1950 and this was by the Catholics.

¹⁴ M.J. and J.L. Robinson, op. cit., p. 254.

¹⁵ Ibid., Part II, Vol. 33, No. 1, July 1946, p. 46.

¹⁶ P.J.B. Duchaussois, Mid Snow and Ice, London, 1923, p. 254.

The founding of the missions had a profound effect upon the settlement. With their coming, more buildings were added to the small post and the clergymen encouraged the natives to build summer cabins near the missions.

During the period of missionary activity major changes in the focus and methods of transportation took place on the Mackenzie System. Edmonton became the focal point to the south from which roads and later a railroad were built to the Mackenzie waterway. Power-driven vessels were introduced on the northern waterway by the Hudson's Bay Company and consequently more freight could be hauled during the short summer shipping season. The first steam boat to service the Mackenzie Valley was the screw propelled 'H.B.C. Wrigley' launched in 1886. The Wrigley was replaced in 1908 by a stern wheeler, the 'H.B.C. Mackenzie River'.¹⁷

With the rise in mission activities along the Mackenzie the Roman Catholic Church developed its own transportation system. Their boats served as common carriers in addition to servicing the missions. The steamboat 'St. Alphonse' was put into service in 1895.¹⁸

Improved transportation services and high fur prices during the first two decades of the twentieth century precipitated an influx of 'free traders' and white trappers into the Mackenzie Valley. With the coming of the 'free' or independent traders the Hudson's Bay Company's monopoly on the fur trade of the region was broken and increased

¹⁷ G.R. Rae, Settlement of the Great Slave Lake Frontier, N.W.T., Canada: From the Eighteenth to the Twentieth Century, Unpub. PhD. Thesis, University of Michigan, 1963, p. 220.

¹⁸ J. McConnell, The Fort Smith Area 1780 to 1961: An Historical Geography, Unpub. M.A. Thesis, University of Saskatchewan, No Date, p. 64.

competition followed. The position of the free traders was relatively strong during the early period because many of the white trappers were anti-Hudson's Bay Company and tended to give their business to the independant traders. However, when fur prices declined during the 1930s, the free traders generally were unable to compete with the larger company.

Awakening Interest--Government, Mines, Oilwells 1900-1965

In 1905, Commissioner White of the Royal Northwest Mounted Police was made responsible for the administration of the laws of Canada in the Mackenzie District. He initiated a system of police posts and patrols throughout the area. A police post was established at Fort Norman in 1920 and was responsible for policing the area including Great Bear Lake.¹⁹ The police performed administrative roles in addition to policing such as Justice of Peace, Commissioners of Oaths, and distributors of relief and welfare payments.

Fort Norman--1920

In 1920, just prior to the main oil rush into the Fort Norman area, the community had attained the status of a settlement. Whereas, the original post consisted solely of a trading store and a group of tents, the settlement in 1920 had a cluster of whitemen's residences of various kinds and numerous native cabins. At this time there were probably at least three fur trading companies represented in Fort Norman. A report of the "Local Conditions in the Mackenzie District,

¹⁹ Canada, Report of the Royal Canadian Mounted Police for the Year Ended September 30, 1920, Ottawa, 1921, p. 32.

1922" states: "Here all the fur trading companies are represented ...".²⁰ "The following trading companies are represented in practically all the settlements within the District: Hudson's Bay Company, Northern Trading Company, and Lamson and Hubbard Canadian Company."²¹ There were also Roman Catholic and Anglican Missions and a Royal Canadian Mounted Police post. This growth of Fort Norman from the original post to the status of a settlement was measured in decades rather than years.

Development of the Norman Oil Field

The finding of oil and the subsequent development of the deposits had a profound effect on the development of the Northwest Territories for it helped to shift the economic base from trapping and fur trading to mining. It also provided a local source of fuel for the Mackenzie Valley and it increased the number of white residents in the Territories.

Oil seepages had been observed for many years about fifty miles below Fort Norman on the Mackenzie River, but it was not until 1914 that several claims were staked. Drilling operations were undertaken in 1920 by the Northwest Oil Company, a subsidiary of Imperial Oil Canada Limited and a well with a capacity of 100 barrels a day was brought in at a depth of only 900 feet.²² The discovery of oil created a minor 'oil rush' to the Fort Norman area. Between 1920

²⁰ Canada, Department of the Interior, Local Conditions in the Mackenzie District, 1922, 1923, p. 11.

²¹ Ibid., p. 13.

²² Canada, Department of Mines and Resources, Canada's Western Northland, Ottawa, 1937, p. 71.

and 1925 more exploration was carried out, but only two more successful wells were drilled and both of these were close to the original well.²³

In 1921, Imperial Oil installed enough equipment to refine the crude oil into a type of fuel oil suitable for use by Mackenzie missions and fishing boats, but the operation was so costly that the refinery was closed down and the wells capped.²⁴ The immediate market was not large enough to warrant production and it was uneconomical to carry the oil to civilization.

It was not until 1932 that production and refining became economically feasible. In the early part of that decade Gilbert A. Labine discovered large deposits of silver and uranium at Echo Bay on the east shore of Great Bear Lake. To fuel the mines that developed, Imperial Oil built a small, 500 barrel-a-day refinery which operated on a seasonal basis.²⁵

The development of the gold mines at Yellowknife (1935), the Great Bear Lake silver-uranium mines, the increasing use of diesel motors in boats and diesel electric generators, and the spread of the use of out-board motors and aircraft²⁶ all contributed towards a growing market for petroleum products. In 1939, a prefabricated, 840 barrel-a-day refinery was brought in to replace the old equipment.²⁷

²³ Trevor Lloyd, "Oil in the Mackenzie Valley", The Geographical Review, Vol. 34, April, 1944, p. 275-307.

²⁴ Pers. Comm., Imperial Oil Limited, Norman Wells.

²⁵ Loc. cit.

²⁶ Aircraft began to be used in the Mackenzie Valley shortly after the discovery of oil at Norman Wells.

²⁷ Pers. comm., op cit.

By September of that year the wells were producing 200 barrels of crude oil a day, and the refinery was producing diesel oil, fuel oil, gasoline and aviation fuel.

The production of oil in the Mackenzie not only resulted from mining development but, in itself, made the development of mining possible. The availability of a local supply of fuel permitted the modernization of transportation facilities which the mines required. Moreover, it permitted the production of electricity and heat which was vital to mining in the north.

Canol

In 1942, with the Japanese occupation of the Aleutians, the strategic location of northwestern North America became important. As a result, the Alaska highway was built and the "Canol" agreement between Canada and the United States was made. The Canol agreement called for the greatly increased development of the Norman Wells oil field, the construction of a 595 mile pipeline and an all weather service road from Norman Wells to a refinery that was to be assembled in Whitehorse, Yukon Territory. From it three pipelines were to carry petroleum products to Skagway and to Fairbanks, Alaska and to Watson Lake, Yukon Territory.

The first troops of the United States Corps of Engineers began to enter the Mackenzie with the first boats in the spring of 1942 and by the end of the summer there were 2000 troops.²⁸ Between the spring of 1942 and February, 1944 these men had constructed more transportation facilities than ever had been constructed in the history

²⁸McConnel, op.cit., p. 118.

of the region. First, they improved the winter road²⁹ from Grimshaw, Alberta to Hay River, and cut winter roads from Hay River to Fort Smith and Norman Wells. Second, they built all weather airfields at Fort Smith, Resolution, Simpson, Wrigley and Norman Wells. Third, they constructed a four-inch pipeline and an all weather road from Norman Wells to Whitehorse.

During the same period, the oil field was further developed and communications were improved. Drilling crews drilled 67 holes and 60 of these produced oil.³⁰ Reserves of the oil field were estimated at some 54 million barrels.³¹ The Royal Canadian Signal Corps extended and improved existing communications by establishing radio stations at Fort Norman and Norman Wells.

The pipeline and refinery at Whitehorse began operating on April 30, 1944, and the flow of oil through the pipeline fluctuated between a minimum of 3000 barrels to a maximum of 4000 barrels a day. The pipeline took twenty months to build and was only in operation for nine months.³² Inasmuch as the operation and maintenance of the pipeline and Whitehorse refinery would not have been a commercially profitable enterprise, the pipeline was closed and many of the wells plugged or capped, and the Norman Wells oil field reverted to its former role of supplying the requirements of the Mackenzie.

²⁹ "The term 'winter road' refers to a route which is usable only during the period of freeze-up. The surface may be either ground or ice normally snow covered, and the vehicles used may use wheels, tracks, or runners."

From: W.C. Wonders, "Roads and Winter Roads in the Mackenzie Valley Area", Occasional Papers in Geography, No. 3, Canadian Association of Geographers, British Columbia Division, Vancouver, 1965, p. 2.

³⁰ C.S. Lord, Mineral Industries of the District of Mackenzie, N.W.T., 1951, Geological Survey Memoir 261, Ottawa, 1951, p. 218.

³¹ Pers. Comm., Imperial Oil Limited, Norman Wells.

³² Richard Finnie, "The Epic of Canol", Canadian Geographical Journal, Vol. 34, March, 1947, p. 137-139.

Subsequently, the Canol crude line was dismantled, material of higher value was shipped south but many of the buildings and much of the material used by Canol still remains in Norman Wells and is used locally.

Fort Norman 1920-1965

Fort Norman continued to grow slowly between 1920 and 1965 and this growth was largely the result of increased government services. With the development of transportation on Great Bear River and Lake in 1932 to supply the mines on the lake, a transportation base camp was established at the mouth of the Great Bear River just north of the settlement. Cargoes were transferred from the Mackenzie River to Great Bear River barges in this relatively sheltered location. During the Second World War the Royal Canadian Signals Corps built a wireless station in the community. Also during this period the Anglican Mission established a hospital which was taken over by the Indian Affairs Branch when the Anglican Mission was abandoned in 1944. In February 1946, the hospital burned down and was replaced by a Nursing Station the following year.³³ With increasing government activity in the Mackenzie, an Indian Agency was established in 1947, a federal day school was built in 1949, and a local Wildlife service office was established in 1956.³⁴ By 1960 the wireless station was abandoned by the Signal Corps and the buildings were taken over by the Department of Transport. However in 1963 the operation of the wireless communication was turned over to the Department of Northern Affairs and National Resources. A Pentacostal

³³ Pers. comm., Father Labat, Roman Catholic Mission, Fort Norman.

³⁴ Loc. cit.

mission was founded in the early 1960's.³⁵ The last of the free traders, Joe Hall, retired in 1962 thus leaving the Hudson's Bay Company as the only store and fur trading company in Fort Norman.³⁶

The natives began to settle more permanently in the community because of increasing opportunities for wage labour with the government agencies, the availability of government services and government-supplied housing. By 1965 few Indians who traded at Fort Norman actually lived in the bush but rather spent varying periods in the bush and used Fort Norman as a permanent place of residence. In 1965, although the basic economy of the settlement was the fur trade, the presence of the Government tended to overshadow this.

Fort Franklin 1930-1965

The Mackenzie River was, in the past, the only avenue of communication in the western sector of the Northwest Territories. All the settlements were located along its banks. Fort Franklin, situated 90 miles away from the major transportation network, only began to develop when transportation to Great Bear Lake was improved in the 1930's. It can well be termed a 'new community', as in 1930 there were only five or six Indian log cabins at the present site.³⁷

Prior to the development of the settlement the natives maintained a nomadic existence in the Great Bear Lake area. Twice a year, once in early summer and once in mid-winter, they would all gather at the present site of the community and travel to Fort Norman, which was

³⁵ Pers. comm., Rev. D. Priest, Pentacostal Mission, Fort Norman.

³⁶ Pers. comm., Father Labat, Roman Catholic Mission, Fort Norman.

³⁷ Pers. comm., Father Fumoleau, Roman Catholic Mission, Fort Franklin.

known as 'the town' to trade their furs. They travelled the ninety miles by canoe in summer and by dog team in winter.

It has only been since 1950 that Fort Franklin became a really permanent settlement. In 1930, A.W. Boland, a free trader, established a trading post at Fort Franklin and in 1932 his buildings were purchased by the Hudson's Bay Company.³⁸ The Hudson's Bay Company conducted trade there until the fall of 1949 as an 'Outpost' under the supervision of the Fort Norman Post. In 1949 the Company constructed a new set of buildings in the native settlement and in 1950, the operation gained the status of 'Post' and has since operated on a year-round basis.³⁹ Also in 1950, the Government built a Federal Day School and the Roman Catholics established a mission in the settlement. The natives tended to settle more permanently in the community when the Indian Affairs Branch supplied them with houses. With the increasing interest in native welfare the government established a Nursing Station at Fort Franklin in 1960. Originally, a small log cabin was used but in 1965 a modern well-equipped building was constructed. A co-operative association, the first Indian Co-op in the Northwest Territories was formed in Fort Franklin in 1963.

Norman Wells 1945-1965

After the Second World War, Norman Wells settled back into peacetime production; its refinery's increasing output reflecting the growth of northern industry. The need for a constant flow of oil products

³⁸ Pers. comm., Dave Kaye, Store Manager, Hudson's Bay Company, Fort Franklin.

³⁹ Pers. comm., Dave Kaye, op. cit.

to the Dew Line which was built in 1955 and the growth of modern communities such as Inuvik and Yellowknife have enabled the refinery to operate on a year-round basis since 1956.⁴⁰ Formerly operated more as a work camp than a full-fledged town or village, Norman Wells has developed into a more permanent settlement with many families taking up residence. The community obtained greater permanency when in 1960 the Government built a Federal Day School and Teacherage as well as opening a Territorial Liquor Store.

Summary

The history of the area may be divided into a number of periods and, although they overlap to a greater or lesser degree, are sufficiently distinct to be helpful in a survey of the history and subsequent settlement patterns and types. The search for new fur trading territory in areas previously only occupied by aboriginal Indians led to the exploration and initial settlement of the Mackenzie. Later in the fur trading period missionaries followed the traders and established missions at or near the fur trading posts. During the twentieth century there was an awakening interest in the Northwest Territories. The development of oil and mining shifted the economic base from fur to oil products and minerals. With increasing numbers of whites in the Mackenzie and extensive social legislation being passed in the rest of Canada, the government took an active interest in the area.

By 1965, the size, prosperity and importance of settlements could only be understood in terms of a complex of factors. The characteristics of a settlement might be comprehensible in terms of its

⁴⁰ Pers. comm., Imperial Oil Limited, Norman Wells.

importance to the fur trade, the mining industry, the government administrations or the transportation industry or any combination of these.

CHAPTER III

THE SUBSISTENCE ECONOMY AND SEASONAL PATTERN OF ACTIVITY

The economy of the majority of the Indians and Metis^{*} is essentially a subsistence economy. Although this group, which is the largest single component of the population of Fort Norman and Fort Franklin, is semi-dependent upon a money economy they seldom have more money than is necessary for the essentials of life and in some cases they do not have enough. Their's is a type of transitional economy. Does hunting, fishing and trapping supplement their low levels of income or does their small cash income supplement the products of hunting, fishing and trapping? Regardless, the Indians and Metis of the area earn a living, with few luxuries, from a combination of a cash income and local renewable resources.

Components of the Subsistence Economy

Earned Income

Earned income of the Indian and Metis group is derived from two main sources which are wage work and trapping. In the past, trapping has been the traditional and only source of cash for the group. In recent years there has been an increase in wage work, although much of this is of a seasonal nature.

*The Metis of Canada are persons of mixed Indian and European blood.

1. Trapping

Most families in Fort Norman and Fort Franklin derive approximately 23 per cent of their total income from trapping. In the past, the selling of furs was the only source of money with which they could buy 'whiteman's goods'. In recent years the earning from trapping has declined partly as a result of the low prices paid for furs and partly because less effort is exerted in trapping because of alternate sources of income. Even though there has been a drop in the importance of trapping in the money economy, it remains the most reliable source of earned income from which the native people can obtain a living. In the area in 1965-1966 season there were 159 active or full-time trappers and non-active trappers.

TABLE V - NUMBER OF TRAPPERS¹ (1965-66)

Settlement	Number of Trappers	Per cent active
Norman Wells	14	40
Fort Norman	65	70
Fort Franklin	80	85

The major fur bearer, by the number taken and the value of the catch, in the area is marten. Beaver is the next most important. However, the Fort Norman fur area, that is the area patrolled by the Game Management Officer resident in Fort Norman, is not considered as one of the better fur producing areas in the Northwest Territories.²

¹ Pers. comm., R. Douglas, Game Management Officer, Fort Norman.

² Loc. cit.

The trapping economy is discussed in more detail later in this chapter in the section on the yearly cycle of activity.

2. Wage Work

Opportunities for wage work in the area are generally variable from year to year and are seasonal and casual, but there are some permanent positions available. The various government agencies resident in Fort Norman and Fort Franklin are the major sources of permanent employment for this group and these agencies only employ a small proportion of the total labour force. Persons who have these permanent jobs are employed as janitor-handymen or cleaning women in the school or nursing station. The Indian Agency employs a guide-interpreter at Fort Norman as does the Wildlife Service. Two persons are employed as clerks by the Hudson's Bay Company, one in Fort Norman and one in Fort Franklin, and the Great Bear Co-op also employs three local people in the latter community. It is not difficult to fill these positions. Most members of the labour force say they would prefer to work steadily in their home community for wages rather than rely on trapping for cash income. The returns are much higher with less effort than is necessary in trapping.

The bulk of the wage work available in the area is seasonal and this is during the short summer period. The availability of summer wage work fits in well with the traditional hunting, fishing and trapping economy for it is during the summer that these activities are least intense. Therefore, people are in the settlements and available for work.

The largest seasonal employers in recent years have been the tourist fishing lodges which have developed at the east end of Great Bear Lake. The four lodges which are open from July 1 to mid-September, employed 47 natives and Metis in the summer of 1966 and 44 of these

were from Fort Franklin. The period of employment generally lasts from late June until mid-September and the people work as guides, janitor-handymen, chambermaids or kitchen help.

A more recent opportunity for wage employment which appeals to the natives is work as big game guides at the two big game hunting outfits which have been established in the last few years in the Mackenzie Mountains west of Norman Wells. During the period from August to the end of September, 1965, two natives from Fort Norman were employed as guides. In the summer of 1966, the Wildlife Service offered a guiding course for natives in the Mackenzie Mountains. Seven men from Fort Norman and two from Norman Wells attended this camp. The operators of the big game hunting outfits agreed to hire the men who pass the course. In the future, guiding for big game hunters could become an important source of seasonal employment for natives.

There are openings for seasonal employment during the summer months with Imperial Oil at Norman Wells. In the past the company has hired labourers from Fort Norman on a seasonal basis. Many of these workers were found to be unreliable. Often the workers would return to Fort Norman for a weekend at home and would not return to Norman Wells to work at the start of the following week. Sometimes during the week they would go out on a party, get drunk, and not turn out for work the next day. As a result of these experiences, Imperial Oil did not hire any natives from Fort Norman during the summer of 1966. This does not mean the company will not hire Indians or Metis. The company does have several native employees. Three families, originally from Fort Norman, have settled in Norman Wells and work for the company and are considered as permanent residents. Also, during the past summer, two males from Fort Franklin were employed by Imperial Oil.

A limited number of Indians and Metis are employed by the Northern Transportation Company. These people work on the Great Bear River and Lake section of the Mackenzie waterway. The males are employed as river pilots, deck hands, or labourers at the portage and the women as cooks and house-keepers. Five residents of Fort Franklin and three residents of Fort Norman were employed by the transportation company in 1966.

There is a certain amount of casual employment available to the native people of the area although much of this varies from year to year. The most significant sector of casual employment is in local construction and most of this is done by the government. For example, during the past summer an addition was built on to the Fort Norman school and seven local people were employed. Other casual employment such as unloading barges, transport of goods from the dock to the warehouses, stacking the oil drums, cutting wood and working for the Hudson's Bay Company are available periodically throughout the year and especially in the summer.

There are opportunities for individuals to earn a cash income through 'piece work' or 'contract labour'. In Fort Franklin the people earn a certain amount of money by the production of handicrafts which they sell to the Great Bear Co-op. The Co-op also buys fish at 15¢ per pound and contracts the cutting of cord wood. These products are sold locally. There is no formal organization for the marketing of either handicrafts or fish in Fort Norman. However, the Catholic priest does buy handicrafts which he sends to Montreal to be marketed. The local contractor in Fort Norman hires several men for a couple of weeks each year to cut wood. He also hires casual labour to help transport goods from the dock to various locations in the settlement.

Although most Indians and Metis say they would like to work steadily in their home community, many seemed satisfied with the greater freedom of seasonal and casual employment. In the past the native culture has been characterized by periods of intense activity and periods or relative inactivity. This pattern of seasonal and casual employment seems to fit in very well with their cultural background.

Unearned Income and Government Assistance

The residents of the area benefit from federal welfare programs in the same way as all other citizens of Canada. Family allowance is an important source of income in most cases and old age assistance is important to a lesser degree. The former pays \$6.00 or \$8.00 per child per month up to the age of 18 years provided they are residing at home. The amount received in old age assistance is \$75.00 per month for indigents over the age of 65 years. Although there are only twenty-one Indians and Metis old age pensioners in the area a large number of people often will be indirectly dependent upon the monthly old age assistance cheques. Of the sources of income--wage work, trapping and government allowances--the latter is the only predictable one and accounts for approximately 19 per cent of the total Indian and Metis income, a substantial financial cushion. Also, Vanstone³ points out that, although the point could not be adequately documented, it seems likely that the availability of a small cash income from the government each month has done a great deal to keep people closer to the community at all times.

³ J.W. Vanstone, The Economy of a Frontier Community: A Preliminary Statement, Northern Coordination and Research Center, Ottawa, 1961, p. 30.

In a treaty with the Canadian Government (Treaty Number 11, 1921)⁴ the Indians of the area ceded their rights to all lands for certain benefits and services which were administered by the Indian Affairs Branch.⁵ By the treaty agreement, the Indians are organized into bands under chiefs and councillors. Band meetings are held at least once a year; usually around the end of June or the beginning of July. At this time treaty money is given out and each Indian receives \$5.00. The band chief receives \$25.00 and the councillors, \$15.00. With the recent reorganization only Registered Indians will continue to receive these benefits.

The new Department of Indian Affairs and Northern Development will provide all Indians and Metis with services which were provided by the Indian Affairs Branch in the past. These services include assistance in hunting and fishing by providing fish nets and small amounts of ammunition. Money may be advanced to individuals who wish to outfit themselves for the winter trapping season. Help also is offered for house construction. In both Fort Norman and Fort Franklin a freezing and cold storage unit, known locally as a 'reefer', is maintained so that both meat and fish can be kept for long periods

⁴ Canada, Department of Citizenship and Immigration, Indians of the Northwest Territories, Ottawa, 1965, p. 15

⁵ In the past, Registered Indians have occupied a special status with reference to the Federal Government and have derived certain benefits that non-registered Indians and Metis did not. A reorganization within the Federal Government as of June 1966 has shifted the administration of Indians from the Indian Affairs Branch of the Department of Citizenship and Immigration to the newly formed Department of Indian Affairs and Northern Development. This new department is to supply many of the benefits formerly restricted to Registered Indians, to Metis and non-registered Indians.

Registered Indians are individuals whose names are included on the official Indian Register, either on a Band List or on a General List. Registered Indian is the legal definition used by the Indian Affairs Branch for people who come under the jurisdiction of the Indian Act.

of time. For needy persons, rations also are provided on a monthly basis, usually by setting up credit at the local store. However, direct dispensation of food by the Indian Agent has not been unknown. In recent years at Fort Norman the Indian Agent has sponsored a caribou hunt to Drum Lake, approximately 100 miles from the settlement, in the Mackenzie Mountains during the winter. Indian hunters travel in to the lake by dog team to hunt and the Indian Affairs Branch charts an aircraft to fly the carcasses back to the settlement. In February 1966, 100 woodland caribou were shot and the carcasses were flown out to Fort Norman where they were put into the community freezer.⁶

Renewable Resources

The non-whites are partially self-sufficient in that they can obtain from the land a large proportion of their diet, they can build their own houses which are constructed mostly of local materials, and get their own fuel. When discussing the economy of this group it is difficult to put a dollar value on the local resources used, although these resources may be the basis of their economy. For example, over 50 per cent of the food consumed is obtained from the local resources. Fish is the largest single item in the diet of the Fort Franklin people and it is supplemented by caribou or moose meat. On the other hand, in Fort Norman meat is the largest component of the diet and fish is secondary. Good fisheries in the vicinity of Fort Franklin and poor fisheries near Fort Norman⁷ account for this difference. Other local

⁶ Pers. comm., John Kostellnik, Indian Agent, Fort Norman.

⁷ Canada, North West Canadian Fisheries Surveys in 1944-1945, Fisheries Research Board of Canada, Bulletin No. 72, Ottawa, 1947, V.C. Wynne-Edwards, "The Mackenzie River", pp. 21-30, R.B. Miller, "Great Bear Lake", pp. 31-44.

food resources used are small game, birds and berries. Less than 50 per cent of the diet consists of purchased foods: tea, sugar, bannock bread made of lard, flour, baking powder and salt. Less frequently, purchased items include canned and powdered milk, dried fruits, rice, oatmeal, jam and canned fruits. Approximately 50 per cent of the Indian and Metis income is spent on food. Since almost every household has at least one team of five or six dogs, the almost continual supply of fish near Fort Franklin saves a considerable expenditure on commercial dog food. On the other hand, in Fort Norman, where almost every family has one team of dogs, the dogs are fed mainly commercial dog food during the summer and during the trapping season they are fed fish and meat. Local materials are used in making snowshoes. Most clothing is bought but foot gear and mitts are made of tanned moosehide.

Intra-Community Trade and Sharing

A further interesting sector of the local economy is the traditional sharing patterns and intra-community trade. Among the Indians, sharing patterns are still strong, especially when a moose is killed. Dogs, canoes, and outboard motors are items that are frequently bought and sold among the Indians and Metis. Individuals often raise extra pups in hopes that they will be able to sell them.

The Yearly Cycle of Activity

The yearly cycle of the subsistence economy can be divided into three major periods of activity: summer, autumn, and winter and spring as one unit.

Summer

The summer months of June, July and August are traditionally a time of relative inactivity, but in recent years many of the men and especially those of Fort Franklin have found wage labour during this period. Otherwise, the dominant summer activities are repairing equipment or houses and fishing. Nets are set near the settlements and a day-to-day supply of fish is caught. At Fort Norman, one of the most unproductive sections of the Mackenzie River,⁸ short nylon or cotton nets are set in the river, slanting out from the shore in back-eddies. In spring, suckers are caught and later pike, burbot, pike-perch and inconnu. 'Bluefish' or arctic grayling are caught at the mouths of streams during their spawning run in early summer. The fish caught are used for day-to-day consumption by dogs and humans. Periodic hunting and fishing trips are made to Brachett and Kelly Lakes⁹ by the Fort Norman people. The excellent fisheries of Keith Arm of Great Bear Lake in the vicinity of Fort Franklin enable the natives to catch enough fish for day to day food for humans and dogs, as well as some surplus which is preserved for future use. The principal fish caught are ciscoes (Bear Lake herring) and lake trout. Also there are a few pike, whitefish, and arctic grayling caught. Herring are caught with 3 or 3½ inch mesh nets which are 100 yards long and 10 feet deep, while 4½ or 5 inch mesh nets which are 100 yards long and 10 to 15 feet deep are used for trout. Fish nets are checked once every twenty-four hours. There is an abundance of arctic grayling at the outlet of Great Bear Lake and these are used for food when the herring fishery fails, as it does periodically. Surplus fish are preserved for future use by freezing

⁸ Ibid., Wynne-Edwards, p. 25.

⁹ For the location of these lakes and other locations and distances from the settlements see Figure III--Locations of Fisheries and Areas Trapped 1965-1966.

in the government supplied freezer or by drying and smoking.

Other summer activities are the gathering of berries, hunting rabbits, porcupines, ducks and geese. Also during this period some people cut and bring in wood for the long winter months.

Perhaps it should be pointed out that whenever the natives leave the settlement they always take their rifles and whenever a moose, caribou or bear is sighted it is immediately shot. Consequently much of the food supply is obtained in this manner although the expressed purpose of a trip was not hunting.

Autumn

The major autumn activities are the storing of a winter supply of fish and preparation for the ensuing trapping season. The Fort Norman people set up fish camps for two to four weeks from September to October at Kelly, Mahoney, Brachett, Loche and Tagatui Lakes. The few trappers in Norman Wells fish Oscar Creek, Turton and Kelly Lakes. The fall fisheries for the Fort Franklin people are Great Bear Lake near the settlement and at the mouths of the Johnny Hoe, Camsell and Whitefish Rivers. Whitefish is caught at the mouths of the rivers during their annual spawning run during September--October is the most important species caught during the fall fishery. In the early fall the fish are dried or smoked. As the season progresses and becomes colder they are frozen. These fish supplies are used mainly for dog food. During the trapping season, which is approximately 215 days in length, each dog is given two fish per day (approximately 8 lbs. of fish). Each trapper has five or six dogs and thus a considerable number of fish are required.

Winter and Spring

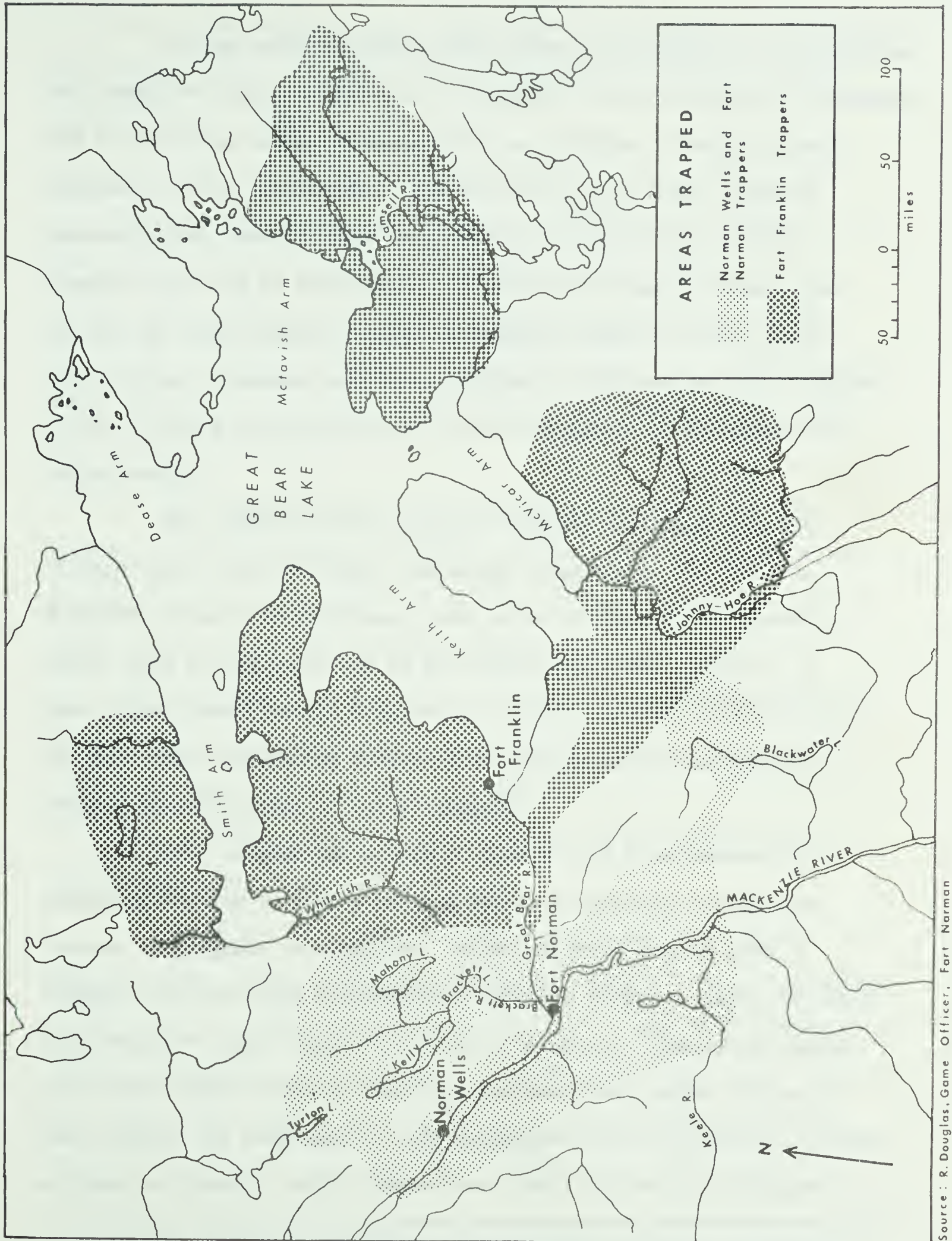
These two seasons are considered together because they are the trapping seasons and most other activities are of subsidiary nature. Trapping begins officially on the first of November when the season for most fur bearing animals opens. Marten, mink, lynx, fisher, otter, ermine and fox can be taken after that date. The season for beaver opens on the sixteenth of November.

The area trapped by residents of Fort Norman, Norman Wells and Fort Franklin is shown on Figure IV. Two significant points should be noticed about this map. The range and area trapped by the Fort Franklin people is much greater than that of the trappers from Fort Norman and Norman Wells and this is largely the result of more effort expended by members of the Great Bear Lake community. There is a relationship between the location of fall fisheries and areas trapped. The location of good fisheries near trapping areas is an important source of dog food while on the trapline.

Before going into the bush, a trapper normally receives a certain amount of credit from the Hudson's Bay Company to enable him to buy supplies. The amount of credit given is based upon his past trapping record and the expectancy of his future catch. As was mentioned earlier, trappers also may receive advances from the Indian Agent with which to buy supplies. The trapper transports his outfit, which includes his dogs and toboggan, by canoe and outboard motor to his trapping area before freeze-up or by dog team after freeze-up. In recent years, with a certain amount of cash on hand after a summer of wage labour, some trappers have chartered aircraft to transport themselves and their equipment to their trapping territory. The trapping areas may be up to 150 175 miles from the trappers' home community.

Figure IV

AREAS TRAPPED 1965-1966



Source : R. Douglas, Game Officer, Fort Norman

In the past, the whole family went out together on the trapline and spent the winter in the bush. Since the rise of permanent residences and since it has become necessary for the children to attend school regularly in the settlements, only the men go out on the trapline. Generally they tend to spend less time in the bush than formerly. Trappers may trap as individuals, in pairs or in small groups. The men who go alone generally have the highest trapping returns while those who go in groups have lower returns.¹⁰ The men who band together on the trapline do so because of lack of equipment or the desire for companionship.

The length of time that the trappers stay away from the village varies considerably. The better trappers go out in early November, return for Christmas, stay in the settlement for several weeks, then go out again and do not return until May. However, a much larger number return frequently to trade furs and obtain supplies. The time spent travelling between the trapline and the settlement reduces the efficiency of these trappers.

Each trapper has a team of five or six dogs because it is necessary for him to have a certain amount of mobility as the area covered in trapping is extensive. After checking over an area, a trapper sets his traps and moves on to another location, makes new sets, and returns to check those at the first location. Usually the traps are checked every three or four days but when the trapper returns to the village, the traps may be left unattended for long periods of time, as long as a month. Many trappers have small log cabins dispersed

¹⁰ Pers. comm., R. Douglas, Game Management Officer, Fort Norman.

throughout their trapping area, while others use eight-foot by eight-foot canvas tents. Traplines are not registered, but most trappers tend to trap the same area each year.

While out on the trapline men have to do a certain amount of hunting and fishing to keep themselves and their dogs supplied with food. Their own food rarely consists of more than staples such as flour, lard, sugar and tea. The fish caught in the fall usually are not enough to last the winter. Fishing is carried out by chopping holes in the ice and setting nets under the ice, but the ice becomes too thick after December.

The availability of game influences trapping. The area trapped by the Fort Franklin people is influenced by the availability of caribou in the area. There is a high degree of correlation between the distribution of barren-ground caribou during the winter¹¹ and the area trapped shown on Figure III. The Fort Norman trappers depend on moose and, to a lesser degree, on woodland caribou. All trappers use the carcasses of the animals trapped for dog food and they supplement their own diet with hares and ptarmigan. The trapping season is very difficult when the hunting is poor.

In spring, the main trapping is for muskrat and beaver. The muskrat season opens on the first of March and lasts until the twentieth of May while the beaver season ends on May 10. Early in the season, the animals are trapped, but when the ice on the small lakes melts, they are shot from a canoe with a .22 calibre rifle. Most trappers own small canvas-covered "ratting canoes" for use during the late spring. They

¹¹ A.W. Banfield, The Barren-Ground Caribou, Canadian Wildlife Service, Ottawa, 1951, pp. 4-5.

are extremely light and easy to carry over the portages from one lake to another.

Summary

The Indians and Metis are able to maintain a livelihood through the utilization of local renewable resources and through unearned and earned income. There are few permanent jobs available, but there are increasing opportunities for seasonal employment. Although most individuals trap, reliance on trapping as a source of cash income has been reduced with increased sources of income through wage employment and government assistance. The basic sources of food are the renewable resources, especially fish, moose and caribou and these are supplemented by food bought at the local trading post. This dependency on seasonal wage labour, trapping, and renewable resources has resulted in a relatively unstable economy as there may be wide fluctuations in the opportunities for wage employment from year to year, in prices and abundance of fur in any year, and in abundance of fish and game from year to year.

CHAPTER IV

FORT NORMAN

The 'Local Service and Administrative Center'

Fort Norman, on the basis of its historical pattern of growth and present functions may be classified as a local service and administrative center. Typically, this sort of settlement developed around a fur trading post. The Indians tended to settle near the post particularly at the in-between seasons when hunting and trapping were at a near standstill. With the advent of missions, schools, nursing stations, and other government services introduced from the south, the permanent population of the settlements increased. Although most Indians and Metis of the area continue to rely on the renewable resource base--hunting, fishing and trapping--the presence of various government services in the community has given the settlements a dual function. As well as being local trading centers, the settlements have become government service and administrative centers for the satellite communities¹ and bush camps² in the local area. Fort Norman, unlike most settlements of this type, has no bush camps in its local area, but it has a satellite

¹ Satellite communities are dependent on the local service and administrative center for most government services. This type of settlement is discussed in more detail in Chapter V.

² Bush camps are loose groupings of several Indian families living primarily in the forest and trading into the local trading center. Fort Norman has not had any bush camps for the last five or six years.

settlement. It would seem that the pattern of development and functions outlined are typical of a number of settlements scattered throughout the Boreal Forest zone of the Northwest Territories, especially along the Mackenzie River System.

Site

Fort Norman is located along the east bank of the Mackenzie River, 290 feet above sea-level, immediately upstream from its junction with the Great Bear River. Local relief is in the approximately 200 to 300 feet. The Mackenzie has a comparatively gentle bank in the vicinity of the settlement but both upstream and downstream the bank becomes much steeper. Behind the settlement and away from the river is a broad meander scar of the Mackenzie. This is a low-lying area that completely surrounds the settlement on the landward side and has a small lake in its bottom, as well as large areas of swamp and muskeg. Further north and east the land rises slowly and becomes better drained towards a long lake (locally called Plane Lake) which is parallel to the Mackenzie. It seems probable that this lake also occupies the lowest part of an old Mackenzie channel.³ Between these two depressions is a ridge, approximately one and one half miles behind the settlement, which is approximately 300 feet above the Mackenzie River. A small airstrip which was built upon the ridge in 1961 is apparently not long enough for small planes to land and take-off and consequently has never been used. Most of the area around the community is covered by unconsolidated glacial drift and fluvial deposits.

³ R.T. Gajda and Peter L. Hill, Terrain and Site Analysis, Fort Norman, N.W.T., Department of Mines and Technical Surveys, Geographical Branch (mimeo), Ottawa, 1962, p. 2.

The settlement proper is situated on three levels along the Mackenzie River. These may be designated as: first, the docking area or beach which has no permanent buildings; second, a terrace some 40 feet above the river and upon which the major part of the Indian sector of the community is located; and third, a terrace some 70 feet above the river upon which the main part of the settlement is situated. Since the poorly drained, low depression runs parallel to the river behind the settlement, recent and future expansion has and probably will occur on the better drained land between it and the river thus forming an elongated settlement pattern which extends in an easterly direction (up the Mackenzie).

Generally, drainage in the settlement is good because of its raised location along the river bank. However, at times of heavy rainfall or peak runoff the roads become nearly impassable. Surface materials have high percentages of silt, clay and fine sand,⁴ and therefore they may become saturated very quickly. The backslope of the terrace upon which the Indian sector of the community is located becomes seasonally moist. These problems of surficial drainage have been alleviated to some extent by the construction of drainage ditches on the lower terrace and along the road sides.

Although the entire community is underlain by permafrost, the frozen subsoil does not pose insurmountable construction problems. Depth of permafrost below the surface varies from one foot under mosses and trees to four to five feet in areas which have been cleared of vegetation. The Roman Catholic Mission building constructed in 1963 has a full-size basement and in the summer of 1966 there was no evidence

⁴ Ibid., p. 6.

of damage to the basement as a result of permafrost. The school, which is the other large building in Fort Norman, is build on a gravel pad and it shows no effects of heaving as the result of frost action. Undoubtedly, the absence of permafrost problems is associated with the relatively well drained river bank site occupied by the settlement.

Harbour and shore conditions are an important aspect of the community because the bulk of the freight brought into the settlement is by barge on the Mackenzie. Two problems have had to be overcome in order to provide adequate landing facilities. The water offshore is quite shallow and increases in depth very slowly. Also, there are frequent fluctuations of water level in the river ranging up to three feet. To overcome these problems a floating dock has been constructed. This dock can move with the changing water level and can be pulled out of the river during the winter freeze-up. The river bottom near the dock has been dredged so that large boats and barges can use the floating dock. Small boats and canoes are pulled up on the gently sloping beach in front of the settlement.

Population

Before considering the population of Fort Norman in detail, it is necessary to point out certain significant features. Since the group under consideration is small, statistical analyses probably are of limited value, but certain characteristics may, nonetheless, be distinguished. The population structure of the community is affected to a significant degree by slight changes in population. The numbers of persons resident⁵ in the community are highly variable throughout the

⁵ I have, for the purpose of the following discussion, except as noted, defined residents of Fort Norman as persons who maintain a dwelling in the community and use it as permanent place of residence for themselves and their families.

the year. For example, during the trapping season most of the men will be out of the community for two to six months. Older children may be attending school and living in hostels at one of the larger centers in the Northwest Territories during the school year. A third feature of the population is the presence of two groups: the Indians and Metis, and the 'whites'. The former group either was born in Fort Norman or has lived there for a long period of time and probably will continue to live in the community in the future. On the other hand, the whites, except for the local contractor, are all representatives of outside agencies who have been transferred to Fort Norman and are liable to be transferred out in the future. The latter group may be termed temporary residents while the Indians and Metis, who form the core of the settlement, may be called the permanent residents.

The population of the settlement has grown slowly over the last fifteen years ranging from a low of 195 in 1951, to a high of 258 in 1961.^{6,7} Rather than a net immigration, this growth is largely the result of a lowering of the death rate while a relatively high birth rate was maintained. (Refer to Table VI) In the period from 1961 to 1965, the population declined from 258 to 246.⁸ During this period twenty-seven persons emigrated and the rate of natural increase was lowered. The immigration of one large family from Fort Franklin tended to offset this out-migration. Persons leaving Fort Norman left in search of better employment opportunities and tended to settle in Norman Wells or in the large centers such as Inuvik. Metis had a greater tendency to leave the community than Indians.

⁶ Based on records of the Roman Catholic Mission and pers. comm., Father Labat, Fort Norman.

⁷ Accurate population statistics for the settlement prior to 1951 are not available because the Indians of the Great Bear Lake area were included with those of the settlement in mission records.

⁸ Op. cit., Father Labat.

Figure V

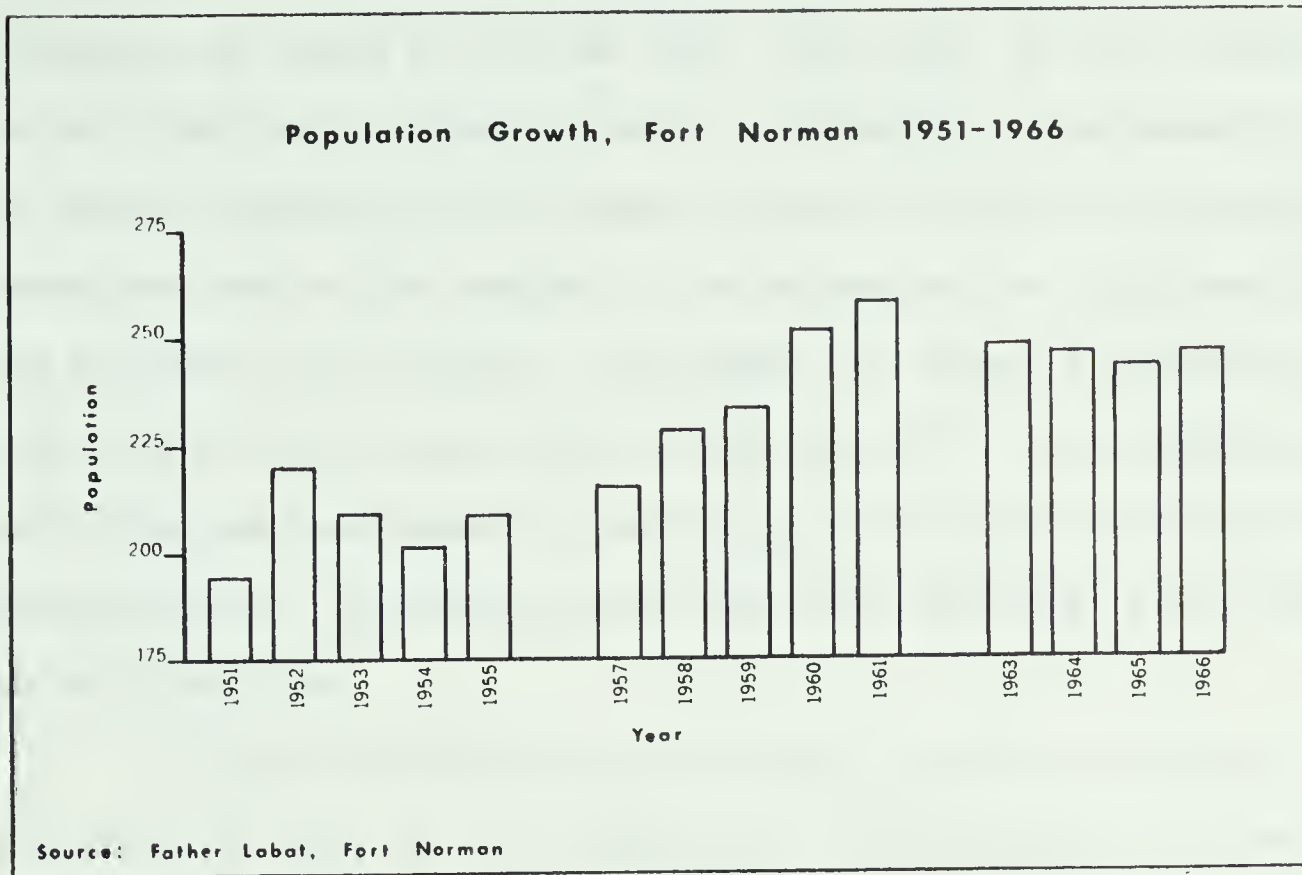


TABLE VI - BIRTH RATES, DEATH RATES, AND NATURAL INCREASE

FORT NORMAN, 1951-1965⁹

Period	Average birth rate per year	Average death rate per year	Average Natural Increase per year
1951-1955	30.9	17.4	13.5
1956-1960	27.1	9.6	15.1
1961-1965	16.9	7.9	9.0

White residents (22 persons) account for only 8.9 per cent of the population, but if two Metis who are employees of outside agencies

⁹ Op. cit.

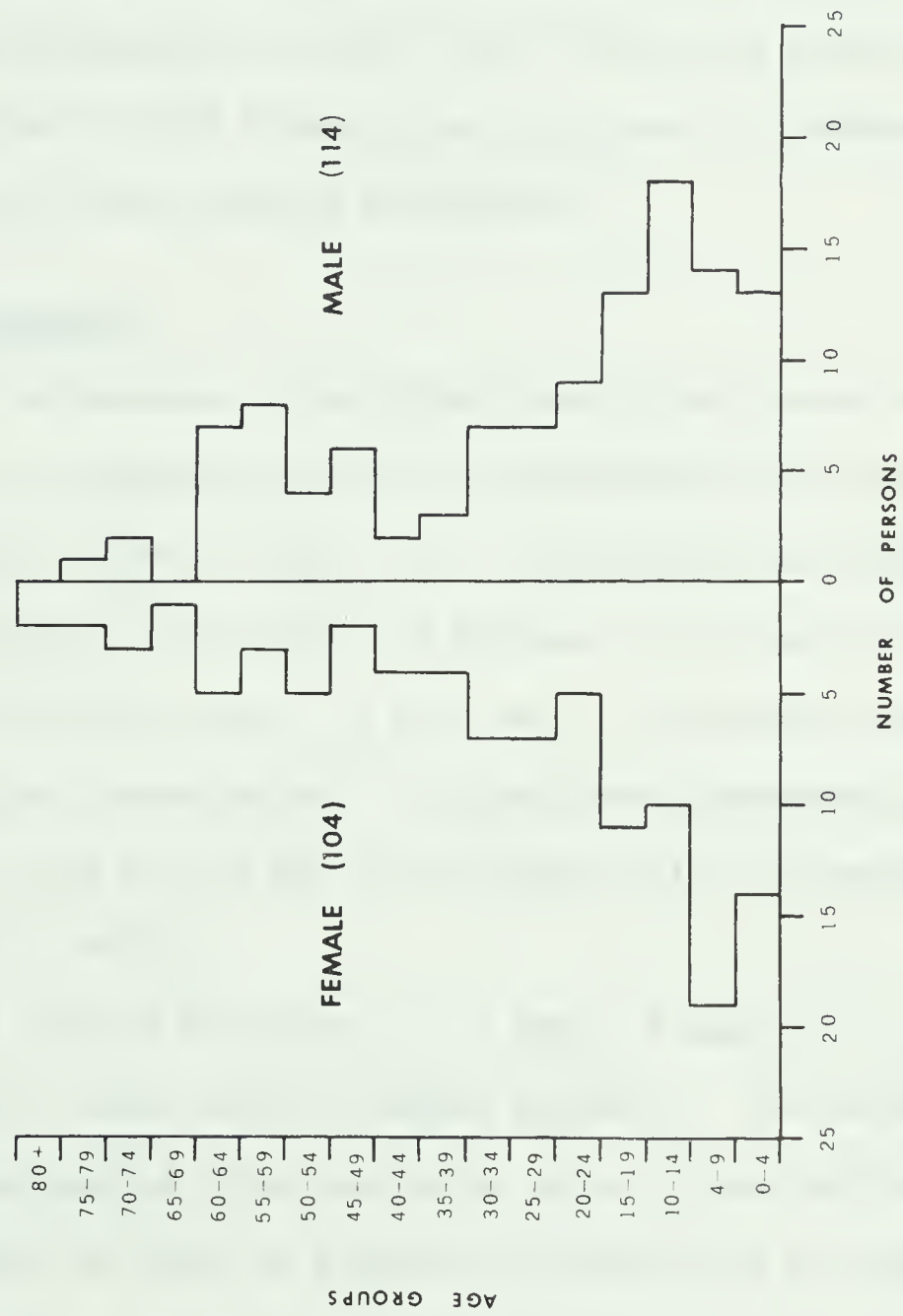
and have been transferred to Fort Norman are classed as whites, the proportion is raised to 15.9 per cent. The number of whites resident in any given year is highly variable. The number of representatives of outside agencies may not change from year to year, but the marital status and size of the families of the whites who are transferred to the settlement are variable. For example, at present a married man with four children accounts for 2.4 per cent of the total population and if the man were single he would account for only 0.4 per cent of the population. The age and sex of the white residents is also variable at any given time.

Indians and Metis account for 84.1 per cent of the total population and they are the stable core of the population. As outlined previously, they form the permanent population and the whites are temporary residents. For the following discussion on population structure only the permanent population is analysed; that is, the Indian and Metis residents.

The age-sex structure of Fort Norman, graphically represented on an age-sex pyramid (Figure VI) is dominated by a young population. Over 51 per cent of the population is below the age of twenty. This reflects, at least up until very recently, the high birth rate. Correspondingly, there is a smaller proportion of persons in the 20 year and older age group--possibly a result of higher infant mortality and death rates in the past and perhaps a period of emigration in the past which no longer takes place today. There are strikingly few persons in the 35 to 44 year age group, which could possibly be related to epidemics which swept the Mackenzie Valley in the early 1930s combined with much hardship during that period. The death toll among young children undoubtedly would be higher than among older children and adults.

Figure VI

AGE-SEX STRUCTURE, FORT NORMAN, 1965⁺



⁺ Excluding whites

In 1939, the Indian population of the Northwest Territories reached its lowest ebb.¹⁰

The dominance of males in the population, frequently noted in the Northwest Territories and especially in mainly white communities, is not particularly marked in Fort Norman. In the case of Fort Norman, the sex ratio (number of males per 100 females) was 109.6, whereas for the Territories and Yellowknife in 1961, it was 126 and 131 respectively. This dominance of males in Fort Norman is not the result of immigration as it is in the case of most northern settlements.

Labour Force and Employment

The number of persons in the labour force (15-65 years of age) outstrips the number of opportunities for wage employment in or near the settlement. In the summer of 1966, of a total population of 246 persons (including whites), there were 137 persons or 55.7 per cent of the population in the labour force; of this total, 118 persons were Indian and Metis while 19 were whites.¹¹ Of the twenty permanent jobs available only eight were held by Metis and Indians while the remaining twelve were occupied by whites.

There is a further dichotomy in the types of positions held by whites as opposed to those held by Indians and Metis. The former group have specialized skills while the latter group is semi-skilled or unskilled. The number and types of positions available and the ethnic origin of persons employed is tabulated in Table VII.

¹⁰

Canada, Department of Citizenship and Immigration, Indians of the Northwest Territories and Yukon, Ottawa, 1964, p. 27.

¹¹

The whites include two Metis and their families who were representatives of government agencies.

TABLE VII - OCCUPATIONS AND PERMANENT EMPLOYMENT BY ETHNIC GROUP
AND SEX--FORT NORMAN, 1966¹²

White			Indian and Metis		
Occupation	Number Male	Employed Female	Occupation	Number Male	Employed Female
Nurse		1	School Janitor	1	
R.C.M.P. Officer	2		Nursing Station Handyman	1	
Teacher	1	1	Nursing Station cleaning woman		1
Indian Agent	1		I.A. & N.D. Guides & Interpreters	2	
Diesel Engineer (I.A. & N.D.)	1		H.B.C. Store Clerk		1
Game Management Officer	1		Labour for contractors	2	
Missionaries	2				
Store Manager H.B.C.	1		Total		8
Contractor	1				
Total		12			

As noted in the previous chapter, there are a number of opportunities for seasonal and casual wage labour in or near the community that are taken advantage of by the Indians and Metis. In July 1966, twenty-two persons were employed temporarily. The types of positions held and the numbers employed are set out in Table VIII.

TABLE VIII - SEASONAL EMPLOYMENT OF INDIANS AND METIS

FORT NORMAN, 1966¹³

Source of Employment	Number Employed		
	Male	Female	Total
School Construction	7		7
Hudson's Bay Company ¹⁴		1	1
Sport Fishing Lodges	1	2	3
Hunting Guide Camp (training)	7		7
Northern Transportation Co. Ltd.	2	1	3
Painter (Nursing Station)	1		1
Total	18	4	22

As well as seasonal employment four or five men are employed casually for short periods of time. Casual employment includes the fighting of forest fires during the summer.

The major form of employment for most Indians and Metis is trapping. In the 1965-1966 trapping season sixty-five persons held trapping licenses but only forty-four of these actually went into the bush to trap. There are sixty-six males in the total Indian and Metis labour force of 118. If only the males are considered as active trappers the figure of forty-four trappers is low. Considering at least four persons of this group are steadily employed and eight of the thirteen males between 15 and 19 years of age were attending school, it would seem that perhaps ten males or almost 25 per cent of this group who were capable of trapping did not in the 1965-1966 season. The twenty-one inactive trappers include the men who are steadily employed, men

¹³ Field Survey, July 1966.

¹⁴ Casual during the summer.

who did not have the initiative to trap, and women who take out trapping permits in order to set snares and traps near the settlement.

The female labour force, excluding whites, is fifty-two or 44.8 per cent of the Indian and Metis group. Only two women work steadily in Fort Norman and both of these are single. During the summer of 1966, three women found seasonal employment outside the settlement while one girl worked casually for the Hudson's Bay Company. All of these women were relatively young (three were still attending High School) and were unmarried. There were no working mothers in Fort Norman, but married women can and do earn a limited amount of money through the sale of handicrafts.

Indian and Metis Income

The total income of the Indians and Metis of the settlement is low. In 1963, the total income, both earned and unearned, for this group was \$69,329.00¹⁵ and the average per capita income for that year was \$318.00. This is both below the Territorial per capita income of \$510.00 for Indians,¹⁶ and well below that of \$1,439.00 for Northwest Territory residents.¹⁷ However, the annual per capita income of the Fort Norman Indians and Metis is above that of \$180.00 for the Hay River Indians.¹⁸ The value and relative importance of the various sources of income are tabulated in Table IX.

¹⁵ Pers. comm., Father Labat, Roman Catholic Mission, Fort Norman.

¹⁶ Canada, Department of Northern Affairs and National Resources, The Northwest Territories Today, Ottawa, 1965, p. 123.

¹⁷ Loc. cit.

¹⁸ J.C. Wallace, Hay River, N.W.T., unpublished M.A. Thesis, University of Alberta, Edmonton, 1966, p. 44.

TABLE IX - INDIAN AND METIS INCOME--FORT NORMAN, 1963¹⁹

Source	\$ Value	Per Cent of Total Income
EARNED		
Wage employment	25,110.00	36.2
Trapping (1962-1963)	18,813.00	27.1
Piecework (approx.)	<u>750.00</u>	<u>1.1</u>
TOTAL	44,673.00	64.4
UNEARNED		
Family Allowance	5,396.00	7.8
Old Age Pension	8,760.00	12.6
Relief	9,500.00	13.7
Unemployment Insurance (approximate)	<u>1,000.00</u>	<u>1.4</u>
TOTAL	<u>24,656.00</u>	<u>35.6</u>
TOTAL INCOME	69,329.00	100.00

Trapping is the basic economic activity of most Indians and Metis of Fort Norman but the dollar value of furs traded accounts for only 27.1 per cent of this group's total income. The average income per trapper in the 1962-1963 season was only \$355 and for many trappers this is the only source of income other than that received through government welfare programs. Although trapping may be the basic activity, unearned income is more important to the local economy in terms of dollar value than returns from trapping. There is only a limited number of employment opportunities in or near Fort Norman, but income from wage employment earned by a small proportion of the population contributes more to the local economy than income derived from trapping. It would seem to be a very unstable situation indeed in a settlement such as Fort Norman in which earned income accounts for slightly less than 65

¹⁹ Pers. comm., Father Labat, Roman Catholic Mission, Fort Norman.

per cent of the total income and government welfare payments slightly more than 35 per cent of the total income.

It does not seem likely that the low per capita income levels of the majority of Fort Norman's residents will be alleviated to any great extent in the near future. Income from trapping could be raised with increased effort coupled with trapping of a more extensive area.²⁰ However, this is a difficult and currently discouraging method of earning a living, especially when a person can receive more money from government welfare programs than he does in some years after spending almost six months in the bush tending his trapline. There are much higher returns per unit of effort from wage employment. This tends to keep men in the settlement in hopes that they can find a job rather than going into the bush. Often these jobs never materialize.

It is often stated in the Northwest Territories that with education, the Indians and Metis could achieve a better standard of living. Having learned a skill, these people must be able to find employment but there are limited opportunities for skilled labour in Fort Norman. There is not likely to be a large demand for skilled labour in the community in the near future. In order to use the skill or education, a person must leave the settlement and attempt to find employment in a larger center, but most of the residents are reluctant to leave Fort Norman. There are some opportunities for skilled labour at Norman Wells, but as yet these have not been utilized by the Indians and Metis of Fort Norman. Perhaps with increased education, not only in skills, but also in the ways of the larger white society this could become a source of steady employment near the settlement.

²⁰ Pers. comm., R. Douglas, Game Management Officer, Fort Norman, July, 1966.

It would seem that income levels could be raised in the future if a balance is achieved through a combination of seasonal employment during the summer and trapping during the winter. The expanding opportunities for semi-skilled seasonal labour, especially in the sport fishing and big game hunting industries of the area, make the future look more promising. Through a combination of these two methods of earning a living, income levels could be raised and this would seem to offer the greatest hope for the near future.

Services and Housing

Within the settlement there is a dichotomy between the standard of housing of the whites and that of the Indians and Metis. While basically the same services are available to all residents, the whites are able to take advantage of all the services whereas the Indians and Metis are not. Lack of money for capital investment and regular monthly payments prevents the latter group from taking advantage of some local services.

Services

Although the services available to Fort Norman residents are rudimentary by southern standards, they seem sufficient to meet the present local needs. These services may be divided into three groups: utilities, Government and Institutional services, and commercial enterprises.

Utilities

1. Electrical Power and Telephone

All the white homes and buildings of outside agencies are supplied with electrical power. The electricity is produced by a diesel

generator operated by the Engineering Division of the Department of Indian Affairs and Northern Development and is sold to consumers at a rate of 12¢ per Kwh. Because of the high cost of electricity, it is used only where absolutely essential. Fuel oil is used for heating as well as in the kitchen stoves and hot water heaters.

In the summer of 1966, only one Indian had electricity in his home and he lived in a house which was, at one time, the Indian Agent's residence. Although electrical power poles have been erected throughout the settlement they remain unstrung. In the future, all Indians are to be supplied with electrical power at a subsidized rate, but before this can take place another generator must be installed and the Indian and Metis homes must be wired. The capital needed for the installation of electricity in the homes and the monthly payment for electricity will undoubtedly pose problems in the future.

Fort Norman has telephone connections with other northern communities as well as with the 'outside' through the recently completed surface communication line. The single telephone is in the office of the Department of Indian Affairs and Northern Development. As well, there is a local telephone system set up by the whites and used only by them. This system, which is a single party line, is characterized by frequent interruptions in service. Also within the settlement there are four radio sets which at times in the past were the only means of communication with other communities and the outside and these are still used to some extent today. Radio sets are maintained by the R.C.M.P., the Catholic Mission, the Wildlife Service, and the Department of Indian Affairs and Northern Development.

2. Water Supply and Sewage

There is no settlement-wide water supply system, nor is there an organized means of garbage collection and disposal. Water is obtained from the Mackenzie River and from river ice in winter. Indian and Metis families obtain their water on an individual basis, storing it in cans and pails in their homes. The local contractor hauls water at a cost of \$1.25 a barrel (45 gallons) for the government agencies and the Hudson's Bay Company. Water is hauled from the river in a large tank and pumped to the various buildings through individual hose lines. Each building has its own pressure or gravity tank. The water supply is not pretreated in any way and so needs to be boiled before use. Because many Indians and Metis do not take this precaution, occasional out-breaks of diarrhea and minor stomach ailments occur.²¹

At present, there are plans for construction of a one and one-quarter mile access road to the Great Bear River to be used for hauling water. This water is more potable than that of the Mackenzie. The problem of water supply for the Indians and Metis probably will not be overcome because it is unlikely that they will be able to pay for hauled water.

Because an inordinate amount of time would have to be spent hauling water and ice as well as the additional amount of fuel that would have to be hauled, the standards of personal cleanliness among the Indians and Metis generally are not as high as those of the whites. The problem might be overcome by the construction of a community bath-house and laundry by the government as was done at Coppermine for the

²¹ Pers. comm., P. Redden, Nurse, Fort Norman, July, 1966.

Eskimos in 1962.²² It is equipped with bathtubs, chemical toilets, and washing machines which may be used free of charge by the Eskimos.

Only the whites have inside toilet facilities while each Indian and Metis dwelling has a small outside toilet. The sewage from houses with inside toilets and running water is piped into heated closed septic tanks. Some of the problems associated with outside toilets are that the pits are often not dug deep enough; when they become full they are not covered over and the latrine is not moved. Unsanitary conditions result. Used water is either dumped on the ground near houses or in open drainage ditches. There is no regular garbage collection in Fort Norman, but the whites usually haul their own to the dump. Both Indians and whites burn garbage in incinerators made from fuel drums. During the winter much refuse accumulates around the homes of the Indians and Metis with the result that the spring thaw uncovers an appalling mess. However, in the spring the whites, Indians and Metis get together and clean-up the settlement, thus improving the appearance of the community.

3. Roads

Although there are only a half a dozen tractors, one truck and one jeep in Fort Norman, the community has a reasonably well kept road system. The settlement has two major streets; one on the lower terrace and one on the upper terrace and these are joined by two minor streets. There are approximately three miles of maintained roads in the settlement. The roads are covered with gravel which has mixed with the fine surficial material. In the summer they are very dusty and

²² Peter J. Usher, Economic Basis and Resource Use of the Coppermine-Holman Region, N.W.T., Northern Coordination and Research Center, Ottawa, 1965, p. 87-88.

become muddy after a rain. Drainage ditches have been dug along the road-side to aid drainage. The local contractor is responsible for the grading and general upkeep of the roads.

Government and Institutional Services

1. School

The Department of Indian Affairs and Northern Development operates a two-classroom²³ Federal Day School in the settlement. Grades one to seven are taught by the two resident teachers.²⁴ In the 1965-1966 school year, fifty students were enrolled. Students who progress past the seventh grade are generally sent to Inuvik or the other centers such as Yellowknife or Fort Smith where they live in hostels and attend a large, modern high school. During the past school year nine local students attended high school in the larger centers. A school workshop for the teaching of industrial arts has been built next to the main school building but apparently is seldom used because of a lack of tools and a qualified teacher. Teachers are provided with housing by the government. One teacher and his family live above the school (a standard type of arrangement in the small settlements) and the second teacher lives in a small, three room house.

One of the problems of education in Fort Norman as it is in many other predominantly Indian and Metis settlements is the sporadic school attendance of many of the students. The children in many cases are not encouraged to go to school by their parents or they may leave

²³ A further classroom was being added in the summer of 1966 and was expected to be open for the 1966-1967 school year.

²⁴ A third teacher is to be employed for the 1966-1967 school year.

the settlement with their families to go trapping for varying periods during the winter and especially during the spring. Family allowances are with-held if children do not attend school, but this measure has met with only limited success. A proposed solution to this problem is the building of a small hostel in the settlement where children could stay while their parents are in the bush. Plans currently are underway for the construction of such a hostel.

2. Nursing Station

The local nursing station, operated by the Northern Health Services Branch of the Department of National Health and Welfare, is much like a small hospital although no doctor is resident. Operated by a public health nurse, the station has a two-bed ward, a maternity bed, a crib and a bassinet as well as a portable X-ray machine, a small oxygen tent and a well stocked pharmacy. In the event of serious illness, patients are flown to Inuvik or to Yellowknife and from there they may be transferred to the Camsell Hospital in Edmonton if necessary. A recent trend has been for expectant mothers to be sent to Inuvik just prior to their delivery date. The nurse whose quarters are in the nursing station runs the local dispensary and is responsible for improving the local hygiene and preventative medicine.

3. Department of Indian Affairs and Northern Development - Area Administrator

With the recent reorganization of federal government departments there is no longer an Indian Agent resident in Fort Norman, but rather an Area Administrator has been appointed. The Area Administrator is responsible for the implementation of government policy as well as for plans to upgrade the standards of living of the Indians and Metis of

the area, including those resident in the settlements of Fort Franklin and Norman Wells. He also performs the duties set up under the Indian Act and Treaty Number 11 formerly handled by the Indian Agent. The former Indian Agent has been appointed as an assistant to the Area Administrator and will remain in the settlement.

4. Wildlife Officer

The wildlife officer of the Fort Norman Game Management District is resident in the settlement. His duties include the supervision of the utilization of the fish and animal resources of the area. A count of all game including furs taken each year is made by the Game Officer when the Indians and Metis renew their hunting and trapping licenses. Coupled with field surveys he is able to keep a close check on use of the wildlife resources and on their availability in his district. From this information he is able to recommend areas that could be more intensively harvested or discourage hunting and trapping in areas that are becoming depleted. Essentially, his role is one of conservation and direction. As well as game management, he is also responsible for conservation of forest resources and forest fire prevention. During the last few years a forest ranger has been sent in to aid the game management officer during the summer.

5. Royal Canadian Mounted Police Detachment

There are two R.C.M. Police Officers resident in the settlement and they are responsible for the normal police work of their district. Periodic patrols are made to Fort Franklin and to Norman Wells²⁵ or whenever a crime has been committed or an investigation

²⁵ An R.C.M.P. Officer is resident in Norman Wells during the summer months.

is required. In the past, the police acted ex-officio as agents for various government departments, but since most government agencies now have representatives in the community the R.C.M.P. no longer perform these functions.

6. Postal Service

The post office is housed in the Hudson's Bay Company store and the store manager acts as the post-master. Mail is brought to the community once a week on the regular air services flight from Norman Wells.

7. Northern Transportation Company

The Northern Transportation Company, a Crown owned corporation which is the only common carrier on the Mackenzie Waterway, provides freight service to Fort Norman. Formerly, the company operated a base camp approximately one mile north of the settlement²⁶ when mining activity on Great Bear Lake was greater. Most vessels passing the settlement during the four month shipping season land to unload or pick up cargo. The frequency of service is highly variable--in one week up to five tugs may call in at the settlement and the next week, none may call in. In 1966, the transportation company unloaded 1238 tons of freight at the settlement. This included 438 tons of miscellaneous cargo from Hay River and 330 tons of barrelled oil products and 470 tons of bulk oil products from Norman Wells. Only 206 tons of freight were shipped out of the settlement during the same year and, of this total 155 tons

²⁶

Goods destined for Great Bear Lake are transferred at this point from Mackenzie River barges to smaller shallower draft Great Bear River barges.

were shipped to Hay River and 40 tons to Norman Wells. The weight of goods unloaded at Fort Norman was higher in 1966 than in an average year because during 1966, Calnex Construction of Calgary shipped in and out heavy construction machinery for the building of an access road to the Great Bear River from the settlement.

8. Churches

Both the Pentecostal and Catholic Churches are represented in Fort Norman. The majority of the residents (196) attend the Catholic Church, while the remaining fifty persons are Protestants and attend the Pentecostal Church.²⁷ The Anglican Mission was abandoned in 1944 and Indians who belonged to that church now attend the Pentecostal Church. Missionaries connected with the churches have prescribed duties concerned with church services, marriages, deaths, baptisms, maintainance of buildings and supplies, and other tasks connected with the mission. They seem more concerned with religious training of Indians and Metis than trying to help them attain a better standard of living. However, the Catholic Missionary is making certain attempts in this direction. The Catholic Church has provided a large playing field and has sporting equipment which can be used by the residents, particularly the children, for recreation.

Commercial Enterprises

1. Contractor

The local contractor performs a number of local functions and services as well as providing a limited amount of wage employment

²⁷ Pers. comm., Father Labat, Fort Norman.

for Indians and Metis. Most of the work done by the contractor is for the various government agencies. These services include hauling water, transporting goods from the dock to their destinations, road maintainance, and cutting wood and poles as well as occasional contracts that are let, e.g. the supply and erection of power poles in the settlement. He owns a small sawmill, but as yet has not cut lumber for sale. One of the contractor's two sons who work for him also acts as the airline agent for Northward Aviation.

2. Hudson's Bay Company Store

The Hudson's Bay Company store is the only retail outlet in the settlement. Originally established for trade in furs, the old 'fur trading post' has now become more like a small town 'General Store'. However, furs still are traded but the volume of furs caught in the area and traded at the store is declining.²⁸ The store's lower profits from furs have been replaced by increased volumes of sales. Indians and Metis who make up the largest market for the store and to whom the store caters, have had more purchasing power in recent years as a result of increased cash incomes. A small proportion of the Store's business is with the whites. Generally, this latter group orders most of their food from the 'outside' and has it shipped in by barge during the summer. Dry goods are ordered from the south through mail order catalogues. Even though there is no open retail store in Norman Wells²⁹ very little of the trade of the Fort Norman store is derived from that settlement. The store serves only the very local area and has a limited but captive market.

²⁹ Both Imperial Oil and the Department of Transport maintain subsidized food stores in Norman Wells, but only permanent employees of the respective employers are allowed to purchase goods in the stores.

Prices of most goods sold at the store are generally higher than in southern Canada, although mark-up is not much more than in southern cities. The cost of transportation is added to the wholesale price plus mark-up with the result that prices become dependent upon weight. For example, the cost of dry goods to the consumer is not much higher than in the south, but heavy commodities such as canned foods are much more expensive. All non-perishable goods are shipped in each summer by barge and a large warehouse is necessary³⁰ to handle the year's inventory of stock, resulting in high costs to the retailer which are passed on to the consumer. Although some fresh foods are shipped in by refrigerator barge during the summer most fresh foods are flown to Fort Norman. Consequently, fresh foods are extremely expensive when they are in stock.

Housing

Housing varies with ethnic identification except for a very few cases. Whites live in houses provided by outside agencies with only two exceptions--the local contractor and the Pentecostal Missionary. The whites' dwellings are one or two-story frame structures similar to those found in middle income urban residential areas in southern Canada. The white contractor has built a house comparable to other white houses in the settlement and the Pentecostal Missionary has a substantial log dwelling.

There are differences between the type of dwelling occupied by Metis and those occupied by Indians. Metis, for the most part, live in log cabins, usually older than Indian cabins, with three to four rooms

³⁰ The Fort Norman store has 1000 square feet of floor space in selling area and 4000 square feet of floor space devoted to storage.

on the ground floor, a loft above, and a smaller cellar beneath the main room. Most Registered Indians live in houses built by the government.³¹ These houses are two to four room frame buildings, sided with lumber and asphalt siding and roofing. They are insulated, have a double floor and are finished inside with plywood. Most of these buildings are approximately 20 feet by 40 feet and have three rooms--a large room used as a kitchen, living and bedroom as well as two small rooms used for sleeping and storage. The government has built seventeen of these houses for which the Indians will eventually pay, but only one person has paid for his house. Indians who have gone off the band-rolls, live in small log cabins generally less well kept than those of the Metis. All Indian and Metis houses are heated by wood stoves. Characteristically, all Indian and Metis dwellings have latrines and in most cases small storage sheds nearby.

Land-Use

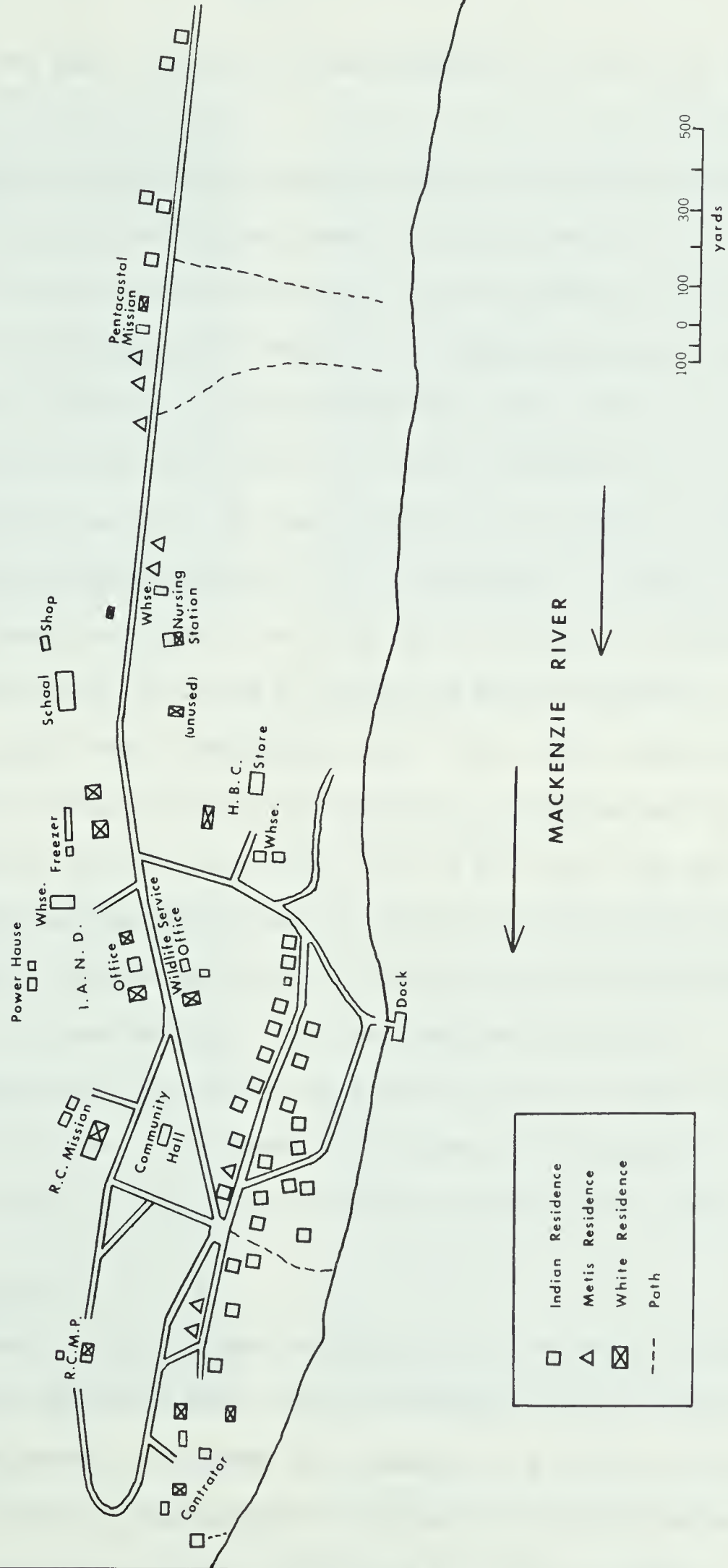
Within the settlement there are three relatively distinct land-use zones; the Indian residential sector, the white residential and service sector and a mixed Indian Metis residential zone.³² The Indian residential sector is located on the lower terrace and is made up mostly of government-sponsored housing. This is the original site of the Indian cabins, and is still the native focal center of the settlement. A mixture of log cabins and more recently built government-sponsored dwellings are laid out haphazardly along one main road for a distance of approximately 400 yards. The local contractor and his married son live at the north end of the Indian residential zone.

³¹ The Indian Chief lives in a house formerly occupied by the Indian Agent which is comparable to other white dwellings.

³² See Figure VII, Land-Use, Fort Norman, July 1966.

Figure VII

FORT NORMAN, N.W.T.



Also located on the lower terrace is a log community hall built by the Community Club.

The white residential and service sector is situated on the terrace above the Indian residential zone. This land-use zone is composed of the buildings and offices of the various government agencies, the Roman Catholic Mission and the Hudson's Bay Company scattered along a single road for a distance of approximately 700 yards. Each unit is made up of an office or place of work, one or more warehouses and a residence. The residence may be in the same building as the office or place or work such as is the case with the R.C.M.P. Detachment, Nursing Station, R.C. Mission and School. Or it may be in a separate building.

The third zone, a mixture of Indian and Metis residences, is situated on the upper terrace immediately east of the white residential sector. It is into this zone that the community is expanding and in recent years several families have been forced to move into this area because of crowding on the lower terraces. Metis residences make up the largest proportion of houses in this zone. Most of the non-Registered Indians live in this area as well, but a few government-sponsored dwellings for Registered Indians have been built along the single road which services the sector. The Pentecostal Tabernacle and mission residence, late comers to Fort Norman, are also located in this area.

Community Organization

Fort Norman could be described aptly as an unorganized community. There is no formal regulatory body such as an elected village council to govern the settlement, but rather the community is a series of disconnected units which are administered by the Northern Administration Branch of the Department of Indian Affairs and Northern Development.

Plate I



Fort Norman - Federal Day School
with teachers' residence above.

Plate II



Fort Norman-Nursing Station
including Nurses' residence

Plate III



Fort Norman - Indian Affairs Branch
Office and residence

Plate IV



Fort Norman - R.C.M.P. Detachment
and residence for two married
officers.

Plate V



Fort Norman - Roman Catholic Mission including church and residence

Plate VI



Fort Norman - Hudson's Bay Company. The store is on the right and the residence is on the left.

Plate VII



Fort Norman - The Indian residential area on the lower terrace. Most of the residences have been built by the government.

Plate VIII



Fort Norman - Indian and Metis residences. Government sponsored Indian residences to the left and a Metis residence to the right.

The government provides services for the settlement as well as providing overall direction. Within the community there are two organizations, a Trappers' Council and a Community Club, to which the various segments of the population belong.

Most of the trappers in Fort Norman belong to the Trappers' Council which is an organization making recommendations concerning trapping in the area. For example, it recommends beaver quotas and areas to be utilized and it may place restrictions on the taking of certain fur bearers in areas that are becoming depleted. Another function of the Council, which is more directly relevant to community organization, is the policing of the loose dog problem. Perhaps one of the most important aspects of this organization is simply that it is a formal organization to which most Indians belong.

The Community Club to which all the whites belong, but to which only a few Indians and Metis belong, is a social organization. Through a combined effort the club has built a log community hall in the Indian sector of the town. Movies are shown twice weekly at a cost of fifty cents to club members and seventy-five cents to non-members. Other functions such as dances, socials, and meetings are held less regularly in the hall. The Community Club also organizes the annual community Sports Day. Currently, the club is building a small curling rink from an old Canol building which they have transported from Norman Wells. Although the club performs a valuable function, this could be even more valuable if all segments of the population, especially Indians and Metis, belonged to it.

Regional Importance

Fort Norman cannot be described as a regionally important center but it is a locally important center because of the government agencies which have been established in the community. In the past, that is before the establishment of a trading post on Great Bear Lake and when the Indians of the Lake area traded in to Fort Norman, the settlement was more important as a local fur trading center. It was because of this importance as a trading center that the government function developed. Today, the Area Administrator resident in Fort Norman is responsible for administering government policy including Indian Affairs over an extensive area. The area administered extends seventy-five miles both north and south of the settlement, west to the Yukon border and east to 120° west longitude. His primary interest is in the settlements of Fort Norman and Fort Franklin and, to a lesser extent, Norman Wells. The R.C.M. Police and the Game Management Officer perform their respective duties in the same area as that of the Area Administrator. It is upon this basis that Fort Norman may be termed a local government service center.

Summary

In summary, Fort Norman, which has been classified as a local service and administrative center has a number of distinct characteristics. The number of persons resident in the community has remained relatively stable over the last five years and this is largely the result of lowering the rate of natural increase and some out-migration. The income levels of the Indian and Metis group who make up the majority of the population are low. Opportunities for wage employment in or near the settlement are limited with the result that many of the members of this group

depend on the renewable resources of the area both as a source of food and of income. A very important source of income for the Indians and Metis is from government welfare payments. The problem of low income will probably become more severe unless new sources of employment are made available when the large number of young people enter the labour force. Functionally, the community is a local trading center based on the presence of a Hudson's Bay Company store. It is also a government service center by virtue of the government agencies represented. Fort Norman has three distinct land-use zones; the Indian residential zone, the white residential and service sector, and an Indian-Metis residential area. The community lacks a local governing body, but is administered by the Department of Indian Affairs and Northern Development. It would seem that these characteristics to some degree will be typical of other settlements which have had a comparable pattern of development and have similar functions to those of Fort Norman.

CHAPTER V

FORT FRANKLIN

The 'Satellite Settlement'

Fort Franklin, on the basis of its historical pattern of growth and present functions, may be classified as a satellite settlement. This settlement has developed relatively recently compared to the local service and administrative center and it is off the main line of communication. Originally, the natives of the Great Bear Lake area traded into Fort Norman but with the opening of a trading post in 1930 near the outlet of the lake and later a mission, the Indians tend to settle more permanently in the surrounding area and as a result the settlement was formed. As well as a trading post and mission, the settlement has a nursing station and school. The administration of the settlement is carried out by the government representatives resident in the local service and administrative center in Fort Norman. Because the settlement is off the main stream of communication and the residents have had less contact with the dominant white culture, the natives are in many ways closer to the traditional way of life than the residents of Fort Norman. It would seem that the pattern of development and functions outlined for Fort Franklin are typical of several other dominantly Indian settlements of the Boreal Forest zone of the Northwest Territories.

Site

Fort Franklin is situated at the outlet of Great Bear Lake and is 524 feet above sea level. The terrain in the vicinity is characterized by an abundance of low sand and gravel ridges interspersed with muskeg. Surficial materials are of glacial and lacustrine origin. The settlement, which is about 250 yards wide, stretches along the lake shore for approximately one half mile. Buildings in the settlement are situated from 10 to 50 feet above the level of the lake.

The settlement is sited upon a relatively level and low area of unconsolidated material consisting of lake deposits of silt, sand, and clay as well as former offshore bar deposits.

Drainage in the settlement is generally poor, but this problem has been alleviated to some extent by the digging of drainage ditches throughout the community. A deep layer of organic material at the surface throughout the settlement provides insulation and, as a result, the active zone of the permafrost near the surface impedes subsurface drainage. Combined with permafrost, the relatively low location of the settlement results in poor drainage.

The presence of permafrost has affected the larger buildings in the community and the construction techniques used, but it affects the small structures such as houses to a lesser degree. The Hudson's Bay Company Store, which has cement blocks for foundations, shows evidence of frost heaving. The new Catholic Church built in 1963 has a shallow basement and the floor has been heaved by frost action. Problems with permafrost have been avoided in the larger government buildings. The school, teacher's residences, and nursing station are all built on thick gravel pads which were laid down over the undisturbed organic layer. Also, the houses often have double floors to insulate

against the melting of the permafrost under the structures and also to keep the cold out.

Docking facilities at the settlement are adequate. The water is sufficiently deep and free of rocks so that barges may be brought into the small wharf that has been built. The wharf is approximately 10 feet wide and 30 feet long. Since there is relatively little fluctuation in the lake level and little danger of ice damaging the dock, it is a permanent wharf. The shore slopes gently to the water and has a sand, gravel beach. A few small rocks are scattered along the shore but they do not prevent the beaching of small boats and canoes.

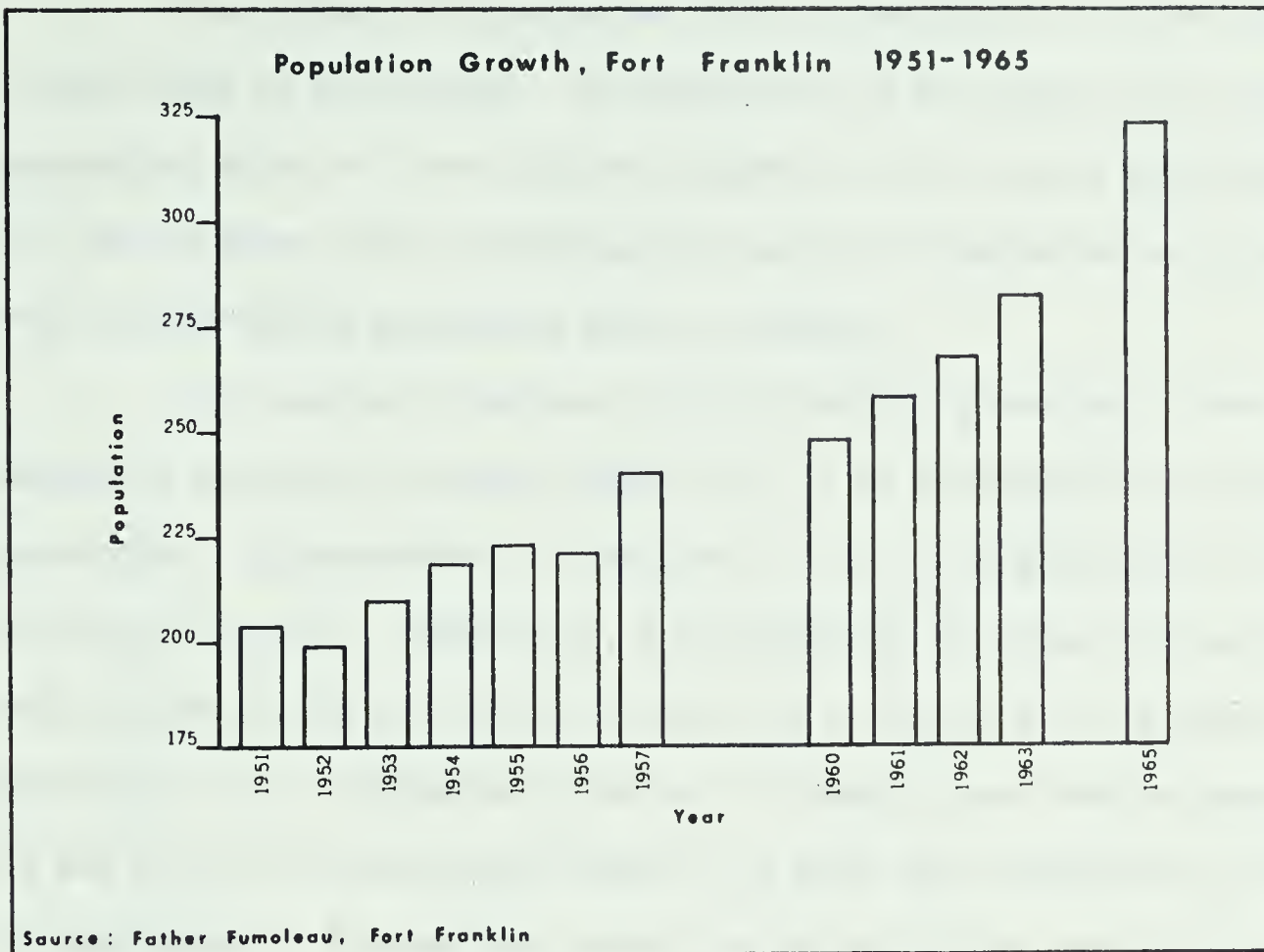
Population

Certain general characteristics of Fort Franklin should be noted: first, since the population of the settlement is small (323 persons), statistical analyses are of limited value, but certain characteristics may nonetheless be distinguished; second, the population structure of the community is affected to a significant degree by slight changes in population; third, the number of persons resident in the community is highly variable throughout the year; and fourth, the population is made up of two groups, 'Indians' and 'whites'. Unlike Fort Norman, there is no resident Metis population in Fort Franklin except a man and his family, who is a representative of an outside agency and has been transferred to the settlement. All Indians are Registered. A similar classification of residency to that applied in Fort Norman may be used, i.e., all whites except one family are representatives of outside agencies and may be termed 'temporary residents' while the Indians who make up the core of the population are the 'permanent residents'.

The settlement has experienced a large increase in population since 1951¹ and this increase is largely the result of natural increase rather than net immigration. In 1951, there were 204 persons who used Fort Franklin as their base and by 1965 the population had increased to 323 persons. By 1965, all the Indian families in the Great Bear Lake area had built a house in the community which they used as their permanent place of residence. Since 1960, two families have immigrated to Fort Franklin from outside the Great Bear Lake area while only one family and several young single persons have left the community. It would seem that the residents of Fort Franklin are less apt to leave the settlement than those of Fort Norman. Perhaps this is related to the presence or absence of the Metis group. As was noted in the discussion of Fort Norman, the Metis population accounted for most of the out-migration from the settlement.

¹ Population statistics of the settlement were obtained from the Roman Catholic Mission. Their tabulations included all Indians in the Great Bear Lake area including those who resided near Port Radium and worked for various periods at the mine but who used Fort Franklin as their home community. Since the closing of the mine in the early 1960s, all of these people have moved back to Fort Franklin.

Figure VIII



Unlike Fort Norman, the birth rate of Fort Franklin did not decline² as death rates decreased. Consequently the settlement is characterized by a high rate of natural increase and this has led to the population growth of the last fifteen years.

The proportion of 'whites' or temporary residents to 'Indians' or permanent residents in Fort Franklin is even lower than that of Fort Norman. Within the settlement there are eighteen 'white' people including a Metis who is a representative of a government agency and his family. This group accounts for only 5.5 per cent of the total population. Further, of the eleven whites who held jobs only two were married while the other nine were single persons.

² The birth rate of Fort Franklin in 1965 was 45.9 while the death rate was 9.6. The rate of natural increase was 36.3; well above that of Fort Norman.

The permanent population of Fort Franklin, i.e., the Indian ethnic group of 305 persons, accounts for 94.5 per cent of the total population which is a much higher proportion than that of Fort Norman. For the purposes of the following discussion of population structure only the permanent population will be analysed.

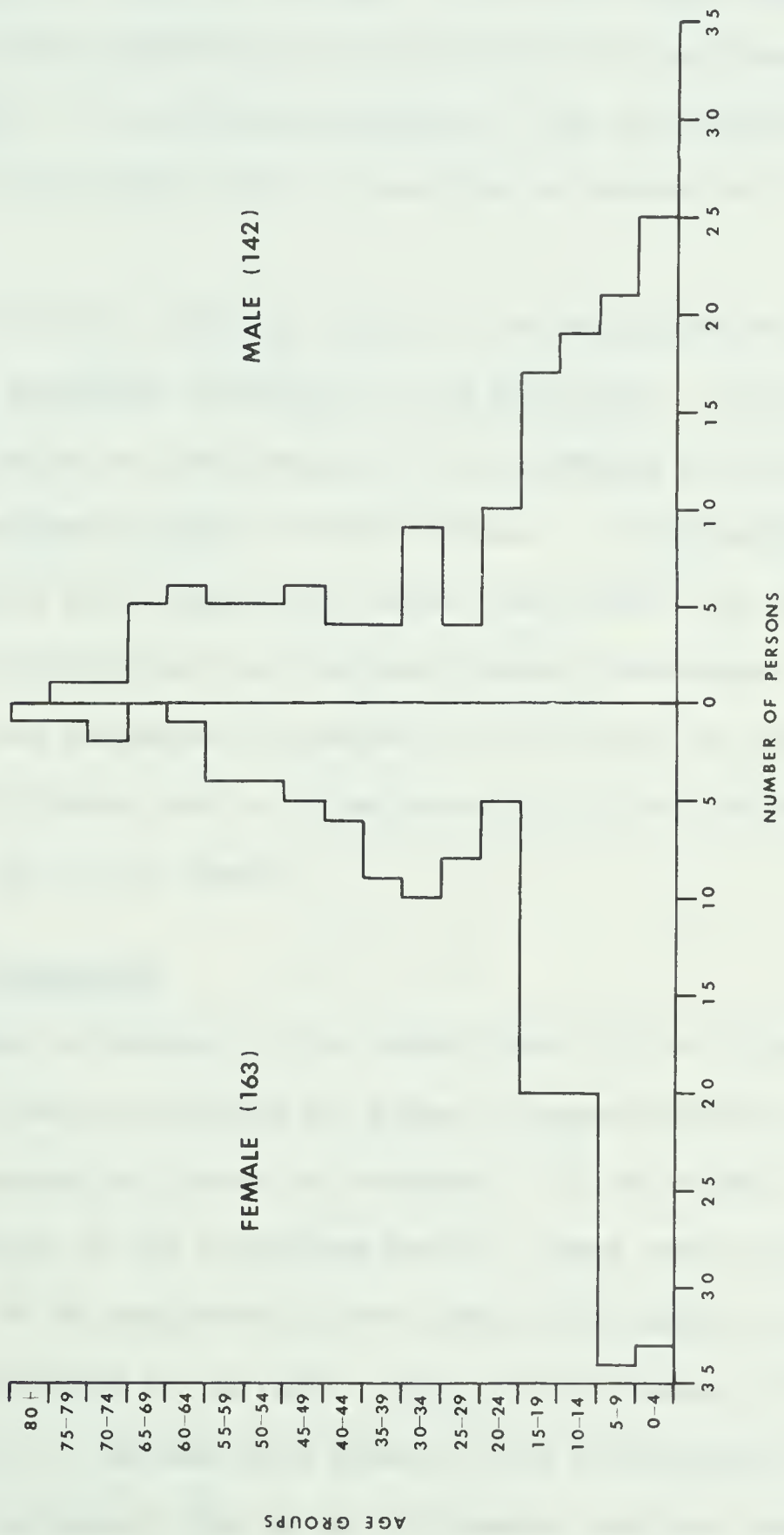
The age-sex structure of Fort Franklin graphically represented on an age-sex pyramid (Figure VII), is dominated by a young population. Approximately 62 per cent of the total population is below the age of twenty. Undoubtedly, this dominance of young persons can only be attributed to high birth rates and a lowering of the infant mortality rate. Persons over the age of twenty years make up approximately 38 per cent of the population which is a much lower proportion than that of Fort Norman. The smaller proportion of population over the age of twenty is probably the result of higher infant mortality and death rates in the past rather than a lower birth rate. An out-migration of persons from the Great Bear Lake area to Fort Norman before the present settlement became firmly established could also be a contributing factor.

There are two problems associated with this imbalance between young people and older persons. First, each male between 20 and 65 years, has 4.8 dependants or, to put it another way, for each male between 20 and 65 years, there are 3.8 persons under the age of twenty. This is indeed a large number of dependants for each male to support in an area of low income. Second, within the next twenty years, the young people will be entering the labour force. Will the resources of the area be able to support the increased hunting, fishing, and

² The birth rate of Fort Franklin in 1965 was 45.9 while the death rate was 9.6. The rate of natural increase was 36.3; well above that of Fort Norman.

Figure IX

AGE-SEX STRUCTURE, FORT FRANKLIN, 1966⁺



⁺ Excluding whites

trapping pressure that will undoubtedly arise or alternatively will there be sufficient employment opportunities available in the area to insure an adequate standard of living? These will become important problems in the future especially since the birth rate has shown no evidence of decline. It would seem paradoxical that over-population could occur in an area where there is less than one person per fifty square miles.

One of the most striking factors of the population of the settlement is the dominance of females in the population. The sex ratio (number of males per 100 females) of the community was 87.1 which is far below that of 109.6 for Fort Norman. In the age group above 20 years there are slightly more males than females but in the age group below 20 years there are far more females than males. It would seem that this dominance of females in the younger age group is the result of a higher rate of infant mortality of male babies than of female babies as well as chance.

Labour Force and Employment

The number of persons in the labour force (15 to 65 years of age) at Fort Franklin outstrips the number of opportunities available for steady wage labour in or near the community. In the summer of 1966 of a total population of 323 (including whites), there were 155 persons or 47.9 per cent of the population in the labour force which is considerably below the proportion in the labour force of Fort Norman. Of the total labour force, 142 persons were Indians while thirteen were whites. Of the twenty-two permanent jobs in the settlement, half are held by Indians.

There is a further dichotomy in the types of jobs held by

whites as opposed to those held by Indians but this difference is not as marked as in Fort Norman. Although most positions held by Indians require little special training, several natives are employed as skilled labour. All whites except one are representatives of outside agencies. The number and types of permanent positions available and the ethnic origin of the persons employed is shown in Table X.

TABLE X - OCCUPATION AND PERMANENT EMPLOYMENT BY ETHNIC ORIGIN AND SEX
FORT FRANKLIN, JULY, 1966³

White			Indian		
Occupation	Number male	Employed female	Occupation	Number male	Employed female
Store manager H.B.C.	1		Janitor-Handyman School	2	
Clerk H.B.C.	1		Nursing Station	1	
Nurse		2	Housemaid School		1
Teacher	1		Nursing Station		1
Diesel Engineer I.A. & N.D.	1		Clerk H.B.C.	1	
Missionary	1		Co-op Clerk		1
Handyman	1		Co-op Manager	1	
			Co-op Operator Tractor-Sawmill	1	
TOTAL		11	Community Health Worker		1
			Home Economics Teacher ⁴		1
			TOTAL		11

³ Field Survey, July, 1966.

⁴ The Home-Economics teacher is a local girl who studied Home-Economics at vocational school. She teaches home-economics at the local school one day per week.

Seasonal employment provides a large number of jobs for residents of the community and the largest employers are the three sport fishing lodges located at the eastern end of Great Bear Lake (refer to figure IV for location of fishing lodges). During the summer of 1966, all males in the labour force except five, (three of whom were building new houses⁵), were working for wages. Compared to Fort Norman this is a high rate of employment considering that the residents of Fort Norman had the same opportunities for employment as those from Fort Franklin. It would seem that the Fort Franklin people are more willing to leave the settlement during the summer to work for wages. Seasonal employment is summarized in Table XI.

TABLE XI - SEASONAL EMPLOYMENT OF INDIANS--FORT FRANKLIN

AUGUST, 1966⁶

Source of Employment	Male	Female	Total
Sport Fishing Lodges (3)	37	7	44
Northern Transportation Company Ltd. (Great Bear River & Lake)	4	1	5
Imperial Oil Limited (Norman Wells)	2		2
Co-op Tractor-Sawmill Operator	1		1
H.B.C. (casual)	<u>1</u>	<u> </u>	<u>1</u>
TOTAL	45	8	53

⁵ The government supplies the material for house construction and the Indian builds the house. While he is engaged in building the house, the Indian is given \$70 per month to live on.

⁶ Field Survey and Pers. comm., Father Fumoleau, R.C. Mission, Fort Franklin, August, 1966.

A less important source of income than seasonal wage labour is income derived from piece-work and casual labour. The making of handicrafts which are marketed through the Great Bear Co-operative is a significant source of income for women of the settlement. In 1965, the Co-op bought \$13,622.00 worth of handicrafts from the local population. As well as marketing handicrafts, the Co-op buys fish and cordwood from individuals and sells these commodities to other members of the community.

Although income from wage work provides a greater share of total income than trapping, there is a heavy reliance upon trapping as a source of income during the winter months. All males in the labour force trap except those attending school and four men with steady employment in the community. In the 1965-1966 trapping season eighty trapping licenses were held and 85 per cent or sixty-four persons were active trappers.⁷ The sixteen inactive trappers are women who hold trapping licenses in order to set traps and snares near the settlement. Compared to Fort Norman, the Indians of Fort Franklin seem to be more willing to trap during the winter.

The female labour force of 52 persons accounts for 50.7 per cent of the total Indian labour force--a proportion higher than that of Fort Norman. Within the settlement there are five steady jobs held by women and three of these women are married. During the summer of 1966, eight young unmarried women were employed in seasonal occupations. Although few married women work for wages, most contribute to family income through the sale of handicrafts.⁸

⁷ Active trappers are persons who leave the settlement and go into the bush to trap full time.

⁸ Pers. comm., Father Fumoleau, former manager, Great Bear Co-Operative Association, Fort Franklin.

Indian Income

The total income and per capita income of the permanent residents of Fort Franklin, although low by southern standards, is higher than that of Fort Norman.⁹ During 1965, the residents of the Great Bear Lake community received a total income, that is both earned and unearned, of \$155,150.00. The resultant per capita income for the year was \$508.70 and this was higher than that of Fort Norman (\$318.00). Fort Franklin compares favourably with the per capita income of \$510 for all Indians in the Northwest Territories but remains well below that of \$1,439 for all territorial residents. The value and relative importance of the various sources of income are tabulated in Table XII.

TABLE XII - INDIAN INCOME--FORT FRANKLIN, 1965¹⁰

Source	Value	Per Cent of Total Income
Earned		
Wage Employment	82,800	53.3
Trapping	30,000	19.4
Piecework	<u>13,250</u>	<u>8.5</u>
SUBTOTAL	126,050	81.2
Unearned		
Family Allowance	13,800	8.9
Old Age Pension	10,800	6.9
Relief	1,500	1.0
Unemployment Insurance	<u>3,000</u>	<u>2.0</u>
SUBTOTAL	<u>29,100</u>	<u>18.8</u>
TOTAL INCOME	155,150	100.0

⁹ Caution must be taken when comparing the two settlements. The income of Fort Norman is based on 1963 earnings while that of Fort Franklin is based on 1965 earnings. Based on field work, it seems probable that income in Fort Norman was no higher in 1965 than it was in 1963 but, on the other hand, the income of Fort Franklin was much higher in 1965 than in 1963.

¹⁰ Pers. comm., Father Fumoleau, former Manager, Great Bear Co-Operative, Fort Franklin.

Trapping is the basic economic activity of the community if the criteria of time spent and number of persons employed are used. However, the dollar value of furs traded accounts for slightly less than twenty per cent of community income. The average income per trapper in 1964-1965 season was \$469.00. More time and effort spent trapping rather than a richer trapping area¹¹ result in higher earnings for Fort Franklin trappers than for their counterparts in Fort Norman. Although trapping may be the basic economic activity as outlined, unearned income is almost as important in the local economy in terms of dollar value as returns from trapping. Returns from piece work are an important contributor to Indian income whereas in Fort Norman income from piece work is almost negligible. By far the most important element in the money economy is income derived from wage employment, particularly seasonal wage labour. Unearned income plays a much less important role in the total economy of Fort Franklin as opposed to Fort Norman, but it remains a significant factor in the latter settlement. The community income of Fort Franklin seems to be achieving a better balance between earned and unearned income than that of Fort Norman. This is largely a result of more initiative on the part of members of the Great Bear Lake community coupled with the opportunities for seasonal wage labour in the sport fishing industry of Great Bear Lake.

It does seem likely that the per capita income levels will remain at least as high as they are today and probably will increase to some extent in the near future. This increase most likely will be the result of increased income from wage employment rather than from higher fur returns unless the price paid for furs increases appreciably.

¹¹ Pers. comm., R. Douglas, Game Management Officer, Fort Norman.

Returns from trapping could be raised with increased effort, but this is a difficult method of making a living. With increasing income from wage labour there has been a tendency among some Indians to put less effort into trapping. Although this has not happened in Fort Franklin yet, it is a distinct possibility.

At present, most males in the labour force take advantage of opportunities for seasonal employment and the next step in achieving higher incomes is for these men to find permanent employment. However, the opportunities for permanent employment in the community are limited and the number is not likely to increase to an appreciable degree in the near future. There is little hope that the Fort Franklin people will be able to benefit from the establishment of a commercial fishery on Great Bear Lake. Surveys by the Fisheries Research Board indicate that the lake is unable to support a commercial fishery.¹² Perhaps one of the more promising sources of employment in the settlement is based on the tourist and sport fishing industries. Currently, the Great Bear Co-Op is studying the possibility of establishing a sport fishing lodge in the settlement.¹³ The Co-Op also intends to use its small sawmill to cut lumber to be sold in the Great Bear Lake area. This development, which would provide several steady jobs, is limited by a small market and the availability of suitable saw timber.

Similar problems to those facing Fort Norman residents regarding permanent employment confront the people of Fort Franklin. In order to secure permanent employment, persons must leave their home community

¹² Canada, Department of Fisheries, Expansion of Fisheries in the Northwest Territories, Ottawa, 1961.

¹³ Although profits from this development would be kept in the community, new jobs created would tend to be seasonal rather than permanent.

and there is a reluctance on the part of most people to do this. This problem will continue to face young persons who are attending high schools and learning specialized skills. The limited opportunities for skilled persons in the settlement will force these people to migrate to the larger centers in search of employment.

Services and Housing

There is a difference in the standard of housing between the 'whites' and Indians of Fort Franklin but, unlike Fort Norman, the Indians of the Great Bear Lake community are able to take advantage of all services which are provided. Although per capita incomes are not high, many Indian families are able to benefit from services such as electrical power which are provided. The services available to Fort Franklin residents are comparable to those of Fort Norman and may be divided into three groups:

Services

Utilities

1. Electrical Power and Communication

All white homes and buildings of outside agencies as well as a half dozen Indian residences are supplied with electrical power. The electricity which is sold at a rate of 12¢ per Kwh is produced by a diesel generator operated by the Engineering Division of the Department of Indian Affairs and Northern Development. Most persons have applied to have electricity installed in their homes but the installed capacity of the generator is not capable of meeting this demand. In order for the remainder of the community to be provided with electricity, a second generating unit must be installed.

Communications in the Great Bear Lake settlement are rudimentary. The sole means of communication with other communities is by two radio transmitting and receiving sets which are operated by the Hudson's Bay Company and the Roman Catholic Mission. Daily contact is kept by the resident missionary with Fort Norman and Norman Wells. Telegrams from the settlement are sent through the Hudson's Bay Company which transmits the message to the Department of Transport at Wrigley and from there the message is sent to its destination. A telephone connection with Fort Norman and the land telephone line is to be established by means of a micro-wave system. At present, a micro-wave tower has been built at Fort Franklin but it is necessary that another tower be built between the two settlements before the connection can be completed.

2. Water Supply and Sewage

All residents obtain their water from the lake immediately in front of the settlement. The government buildings and residences all have running water. Water from the lake is pumped directly into large pressure tanks at all seasons of the year. A rudimentary summer water supply system was built in 1963 to service the majority of the residences. This system consists of a series of communal taps scattered throughout the settlement. They are connected by plastic pipes to a main pump which pumps water directly from the lake. Bleach is added to the water to purify it. The chlorine in the bleach acts as the purifying agent. The efficiency of the system has been greatly reduced because before the fall freeze-up, water has been left in the pipes with the result that the water freezes and the pipes crack. Every summer, the system has been repaired but only three taps in the community function.

Many families still draw their water from the lake simply because the lake is closer or because they do not care for the taste of the treated water. During the winter, all Indian families draw their water directly from the lake through holes cut in the ice. The lake ice may become five feet thick.

The natives of Fort Franklin have the same problem of personal cleanliness as the Indians and Metis of Fort Norman and for the same reason. At present, school students are able to use showers in the school but the facilities are not large enough to service the entire community. The construction of a community bath and wash house would help to solve this problem.

Sewage from the Government buildings, that is, the Nursing Station, school, and residences, is piped through a utilidor system to a sewage lagoon. The utilidor system houses water and sewage lines. Although it is heated, it occasionally freezes during the winter. This problem is apparently the result of a lack of insulation surrounding the pipes.

All Indians have outside toilets and used water is either dumped on the ground near houses or in open drainage ditches. Unsanitary conditions which result are similar to those discussed in Fort Norman. The installation of chemical toilets would help to reduce the problems associated with latrines. Both natives and whites burn much of their garbage in incinerators and whites haul their unburnable garbage to the dump regularly. The refuse that tends to collect around the Indian homes during the course of a year is usually cleaned up after the spring thaw through a combined effort of all residents of the settlement.

3. Roads

There are no roads as such in Fort Franklin but rather zones of movement. Roads have not been necessary because of a lack of motor vehicles,¹⁴ but should the need arise, the cost of construction will be high. Since the community occupies a wet site, a good gravel base will have to be laid down for road construction and drainage ditches must be dug along the road.

Government and Institutional Services

1. School

Fort Franklin has a Federal Day School in which grades one to eight and kindergarten are taught by four resident teachers.¹⁵ The school which had an enrollment of eighty-six students in the 1965-1966 school year has six classrooms--three elementary classrooms, one high school classroom, and two special classrooms (one for teaching kindergarten and one for teaching home-economics). It is expected that a gymnasium will be added in the near future.¹⁶ Students who progress past the eighth grade are sent to a larger center to attend high school.

The problem of sporadic attendance of many of the students is not as severe as that in Fort Norman although attendance levels are lower than those in the south. A particularly hard-working school principal, through informing parents of the value and necessity of education, is responsible for the level of attendance of Indian children

¹⁴ In the summer of 1966, the only motor vehicles in the settlement were a tractor and a small caterpillar tractor.

¹⁵ A fifth teacher is to be added to the staff for the 1966-1967 school year.

¹⁶ All schools of five or more classrooms in the N.W.T. are to be provided with a gymnasium.

at the Fort Franklin school. As in Fort Norman, a plan is underway to provide a small hostel for the settlement to house children while their parents are in the bush trapping.

2. Nursing Station

Built in 1965, the new nursing station of the Great Bear Lake community is much more modern and larger than that in Fort Norman. The station has a large clinic room for examining patients, a maternity room with two beds and two bassinets, and a single and a double bed ward as well as a large health room used to teach the local people about good health habits. In short, the station is equipped to handle a larger population than is now present in the community. The residence of the two public health nurses who operate the local dispensary is in the nursing station.

The Fort Franklin station functions the same as the Fort Norman station. Patients with serious illnesses or injuries are sent to Inuvik to receive specialized medical care. Expectant mothers, especially those with likely complications, also are sent to Inuvik. The nurses' duties are to run the local dispensary, practice preventative medicine, and improve local hygiene. A local woman, who has been trained and who works for the nursing station as a 'community health worker', helps the nurses teach the natives more about sanitation and health. Apparently, the program has been reasonably successful. Fort Norman does not have a community health worker.

3. Government Administrative Agencies

One of the most important factors in the classification of Fort Franklin as a 'satellite settlement' is the lack of government

administrative agencies in the community. The administrative functions are performed by agencies resident in Fort Norman. Representatives of these agencies (R.C.M. Police, Area Administrator, and Game Management Officer) make periodic visits to the community to perform their respective duties. Both the area administrator and Game Management Officer maintain cabins in which they can stay while in the settlement.

The diesel engineer who operates the electrical power plant for the Department of Indian Affairs and Northern Development is responsible for all government buildings and material in the settlement. He must maintain the buildings and oversee the unloading and storage of incoming government freight. In short, he is at most times, the government representative in the community.

4. Postal Service

The resident Catholic missionary acts as postmaster and the local post office is housed in the mission building. As in the case of Fort Norman, the settlement dispatches and receives mail once a week on the regular air service flight from Norman Wells. Mail service is disrupted during fall freeze-up and spring break-up.

5. Northern Transportation Company

Although the Northern Transportation Company Limited does not operate an office in Fort Franklin, the bulk of the materials brought into the settlement is shipped in by barge via the Mackenzie and Great Bear Rivers. The shipping company maintains a base camp at the head of the Great Bear River--five miles across the bay from Fort Franklin. The first barges for the community usually arrive near July 1 and service is irregular for the remainder of the shipping season. Materials are only brought across to the settlement from the base camp when a complete

barge load can be made up. In 1966, 525 tons of cargo was unloaded at the settlement and this included 421 tons of miscellaneous freight from Hay River and 80 tons of barrelled oil products and 24 tons of bulk oil products from Norman Wells. Only 66 tons of freight was shipped out of the community during the same year and of this total, 48 tons mostly empty oil drums were shipped to Norman Wells.¹⁷

6. Churches

The only church represented in the Great Bear Lake community is the Roman Catholic Church and all residents except four or five are nominally Catholics. The functions of the mission and the duties performed by the missionary are the same as those discussed in the previous chapter on Fort Norman. The Priest resident in Fort Franklin since 1961 has worked hard to help the native attain a better standard of living and his efforts have brought much success. It was the missionary who fostered the idea of an Indian Co-Operative and he was instrumental in its establishment and initial success.

Commercial Enterprises

1. Hudson's Bay Company Store

The discussion of the Fort Norman Hudson's Bay Store applies equally as well to the Fort Franklin store. A larger share of the store's profits are from the sale of general merchandise than from fur. Whites account for only a small proportion of the store's market. Prices at the store are higher than those in southern Canada and price is largely dependent upon weight. Generally, prices of commodities are higher than in Fort Norman. Increased cost of transportation is

¹⁷ Pers. comm., Northern Transportation Co. Ltd., Edmonton, Alberta

is responsible for higher prices. A large proportion of storage area versus selling area is necessary to store the year's inventory of merchandise brought in by barge during the summer. The Fort Franklin store's market, as in Fort Norman, is local except that a limited amount of business is done with the sport fishing lodges on the lake and the tourists from the lodges.

2. Great Bear Co-Operative Association

Although it has been operating since January, 1961, the Great Bear Co-Operative Association was not officially incorporated until June, 1963. The objectives of the Co-Op were stated formally at the first official meeting.

"The objectives of the Fort Franklin Co-Operative are:

1. to bring improvement to living conditions.
to develop an ambition for better living conditions.
to bring a greater opportunity for this development.
2. to bring organized economic development.
3. to allow the Indians to become 'increasingly self-supporting and independent members of the community."¹⁸

In short, the formation of the Co-Operative by the local residents was a community development program. The Co-Op has been reasonably successful in achieving these aims by providing a source of employment for most people in the community so that relief payments are now almost unknown whereas in the past they were very common. The various economic endeavors of the Co-Op include the organization of the production and sale of handicrafts; buying and selling local produce such as fish and cut wood within the community; the operation of a small store which sells handicraft material, groceries, and a limited selection of dry goods and hardware; the operation of a small caterpillar for local hauling; and a small sawmill. As well, the Co-Op recruits employees for the sports

¹⁸ Pers. comm., Father Fumoleau, Past Manager, Great Bear Lake Co-Operative Association, Fort Franklin, August, 1966.

fishing lodges on the lake and supplies the lodges with guides and boats when fishing parties are brought to Fort Franklin. The volume of trade handled by the Co-Operative in 1965 is summarized in Table XIII.

TABLE XIII - TOTAL RECEIPTS--GREAT BEAR CO-OPERATIVE ASSOCIATION
FORT FRANKLIN, N.W.T., 1965¹⁹

Source	Value
Co-Op Store	\$14,000.00
Fish Sales	1,074.00
Firewood	542.00
Tractor (contract)	2,530.00
Handicrafts	<u>13,622.00</u>
TOTAL	\$31,768.00

One of the more important contributors to the local economy is the sale of handicrafts which are marketed in Norman Wells, Inuvik, Edmonton, Saskatoon, and the sports fishing lodges on Great Bear Lake as well as locally.

The Co-Operative is administered by a board of five elected directors including the chairman and vice-chairman. A local Indian whose training was sponsored by the government has taken over as manager of the association from the resident missionary who initiated the movement. Dividends are shared among the thirty-six members but all members of the community benefit because the Co-Op provides them with a market for their handicrafts, fish, and firewood. As well as being a source of income, the association endeavors to find seasonal wage

¹⁹

Op. cit., Father Fumoleau.

employment for all males in the community.

Housing

Housing varies with ethnic identification. Whites live in houses provided by outside agencies with only one exception--the nursing station handyman. Their dwellings are similar in standard to those of middle income families in southern Canada. The white handyman has built a substantial, squared log house. Indians, for the most part, occupy small log dwellings. As in Fort Norman, the government has sponsored the building of houses for the Indians. In Fort Franklin, the government supplies the material for house construction and the Indians build their own houses without any formal instruction. While engaged in house construction, the individual is given relief amounting to \$70.00 per month. These houses are built with squared logs, have a double floor, and are insulated and finished inside with plywood. Most of the government-sponsored houses have three rooms and have an assessed value of \$3000.00. Since this program was initiated in 1961, eighteen houses have been built and in the summer of 1966, three more were being constructed. The remainder of the native dwellings are also of log construction, but they were built by the Indians themselves before 1960. These houses are much less finished than the government houses. Usually, the dwelling has two to four rooms; the round logs used in construction are caulked with moss and mud; the inside may be lined with cardboard or plywood but is rarely insulated. The dwelling has a plank floor and a storage loft above. Most Indian houses also have a small storage shed nearby which is used for the storage of dried or frozen fish as well as other materials such as traps, dog harnesses, outboard motors, and tools. The native dwellings of Fort Franklin appear to be better kept than those of Fort Norman.

Land-Use

Unlike Fort Norman, there are no distinct land-use zones except that the government buildings and Roman Catholic Mission are located in the north-eastern sector of the linear type settlement.²⁰ The Hudson's Bay Company store is located at the north-west end of the settlement and the native residences are scattered haphazardly along the lake shore between the government sector and the Hudson's Bay Company store. Access to the lake has been the dominant factor in the location of the Indian dwellings in this area. Current expansion of the settlement has been along the lake shore to the west and also there has been some expansion behind the main body of the community. Although these dwellings built in the latter area are away from the lake, they are closer to the core of the settlement. Future expansion probably will take place away from the lake shore since property in this area is becoming limited. Further, the distance from the center of the community also is becoming a disadvantage. The main zone of movement is behind the first row of houses along the lake stretching from the school to the Hudson's Bay Store.

Community Organization

Like Fort Norman, the Great Bear Lake settlement is an un-organized community which is administered by the Northern Administration Branch of the Department of Indian Affairs and Northern Development. The government provides services and overall direction for the community. However, the teachers, nurses, and the resident missionary have more influence on the natives of the community than their counterparts in Fort Norman. The influence of these people replaces that of the

²⁰ Refer to Figure X, Land-Use Map, Fort Franklin.

Figure X

FORT FRANKLIN, N.W.T.

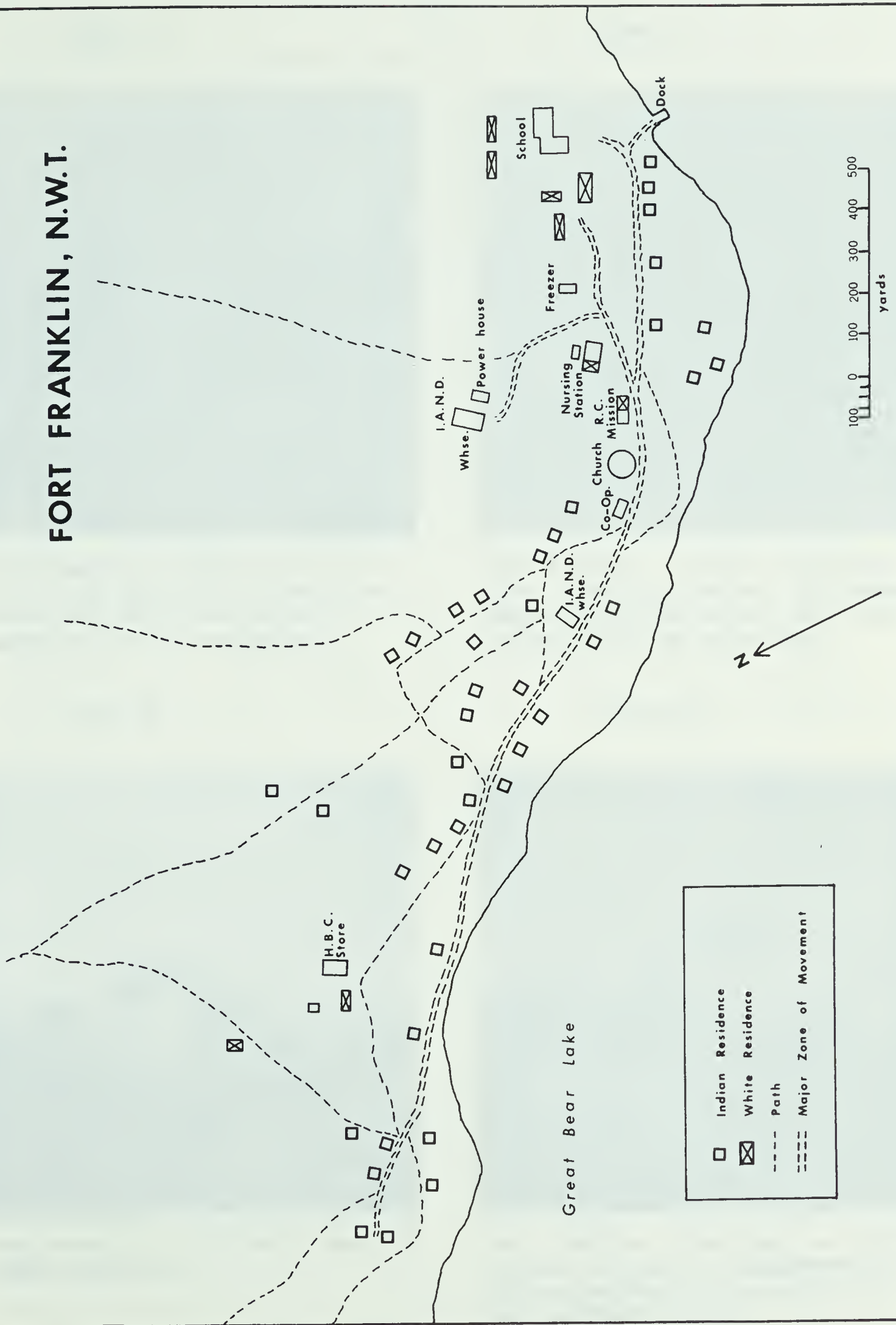


Plate IX



Fort Franklin - Nursing Station in the foreground and the Federal Day School and associated teachers residences in the background.

Plate X



Fort Franklin - Indian residential zone. Note the Hudson's Bay Company Store to the rear of the settlement at the end of the major path.

Plate XI



Fort Franklin - Government sponsored Indian residence.

Plate XII



Fort Franklin - Sled dogs and Indian storage shed in the foreground and Indian residence not sponsored by the government behind.

Indian Agent or Area Administrator in Fort Norman. Fort Franklin also has a Trappers' Council and a Community Club in Fort Norman. The Community Club, whose membership includes most residents of the community, sponsors the showing of movies twice weekly in the school²¹ for the same prices as at Fort Norman. As well, the Club holds dances and socials periodically. Currently, through a joint effort by the Co-Op and the Community Club, a covered skating rink is being built in the community. An old Canol building, which was purchased from Imperial Oil at Norman Wells for \$1.00 was dismantled and the material was hauled by barge to Fort Franklin for construction of the covered rink.

Regional Importance

Since Fort Franklin does not exert any influence on other settlements and, in fact depends on Fort Norman for government administration, the settlement has no regional and only limited local importance. The majority of the residents rely on the renewable resource base-- hunting, fishing, and trapping--combined with seasonal wage labour. Today, the settlement exists as a small serviced native community.

Summary

In summary, Fort Franklin, which has been classified as a 'satellite settlement' has a number of distinct characteristics. The population of the settlement has been increasing rapidly and this is largely the result of natural increase. Consequently, a large proportion of the population is below the age of twenty and there is a danger that the resources of the area may not be able to support this increased population. Although the per capita income of the Indian community is

²¹ Fort Franklin does not have a community hall.

low, it is much higher than the per capita income of the Indians and Metis of Fort Norman. Opportunities for permanent wage employment in the settlement are limited. Most males obtain a living through the use of the renewable resources combined with seasonal wage labour. Local produce such as handicrafts and fish which are marketed through the Great Bear Co-Operative Association are an added source of income. Welfare payments are a significant source of income but they are not as important to local income as in Fort Norman. Indians of Fort Franklin seem to have more initiative than their counterparts in Fort Norman. Although rudimentary by southern standards, the services available in the settlement, with the exception of electrical power, seem sufficient to meet local demand. Functionally, the community is a very local trading center based on the presence of the Hudson's Bay Company store and the Great Bear Co-Operative Association. The unorganized community which is composed of a number of Indian dwellings scattered haphazardly along the shore of Great Bear Lake is administered by the government agencies of Fort Norman. It would seem that these characteristics, to some degree, will be typical of other Indian settlements which have had a similar pattern of historical development and have a similar function to that of Fort Franklin.

CHAPTER IV

NORMAN WELLS

The 'Company Town'

Norman Wells has been classified as a company town because its development was controlled by a single company whose sole purpose for establishing the settlement was the extraction and refining of oil. Communities of this type are single enterprise communities whose 'raison d'etre' is the exploitation of a single resource. The company developing the resource supplies housing and services for its employees and therefore controls the planning and development of the settlement. Location of the settlement is determined by the existence of the resource, and the life of the community is tied to this resource. If the resource being developed is non-renewable, such as mining or oil production, it is to be expected that the settlement will last only as long as the resources can be exploited profitably.

The Oilfield, The Refinery, and Production

The stratigraphic trap from which the crude oil is drawn is a coral limestone reef sealed between an upper and lower shale series of Devonian age. The coral reef reservoir rock is contacted at an average depth of 1350 feet on the river bank or up-dip side and at about 1900 feet on the Islands¹ or down-dip side. Extensive drilling has

¹ The Norman Wells oilfield extends under the Mackenzie River and producing wells are located on both the mainland and on two alluvial islands in the river.

delineated the productive area of the pear-shaped reef covering an estimated 3858 acres. The main area contains approximately 709 acres; Bear Island, 458 acres; Goose Island, 770 acres; and the underwater area, 1921 acres. It is generally believed that about one half of the oil reserve underlies the river which separates the three productive areas.²

The reef, which is up to 400 feet in thickness, has an oil section from the 0 to 388 feet level. The overall structure is monoclinial and dips in a southwesterly direction at an angle of approximately 4 degrees. On the up-dip side the reef is pinched out, while it extends for an unknown distance on the down-dip side. Where the reef has been encountered in wildcat locations, it proved that active water drive is the recovery mechanism. Past experience with fields produced by water drive indicates that 30 to 70 per cent of the original petroleum can be recovered depending on the structure of the reservoir rock. The low structural dip and the varying permeability of the limestone reef are not favourable for a large recovery in the Norman Wells field. On this basis, a recovery factor of 30 per cent is felt to be very reasonable. Recoverable reserves are roughly estimated at about 24,000,000 barrels.³

A total of sixty-nine wells has been drilled in developing and defining the Norman Wells oil field. Five were drilled prior to 1942 and the remainder under the Canol agreement. These include thirty-two on the mainland, nineteen on Bear Island and eighteen on Goose Island. There has been no drilling in the field since the close of the project in 1945. The wells which were located in low areas of

² E.G. Ridge, General Principles for the Planning of Sub-Arctic Settlements, Unpub. Thesis, University of McGill, 1950, pp. 445-452.

³ Loc. cit.

the field and were very susceptible to ice damage during the river break-up, were plugged protectively at the close of the Canol project. All wells on Goose Island, with the exception of four located on higher ground, were plugged. Also, three wells on the north shore of Bear Island and five wells along the mainland shore were plugged. Crude from the wells on the Island is barged across the river in the summer and during the winter a temporary, three inch, crude pipe is laid over the river ice to the mainland.

The crude oil and natural gas issuing from the wells first is collected into batteries. The batteries separate the crude oil and gas and control the flow of the crude to the refinery. This crude oil supplies the refinery unit which is capable of refining approximately 1500 barrels of crude per day. Since 1956, the refinery has operated on a year-round basis. Production is confined to light and heavy diesel oil, bunker fuel oil, aviation gasoline, motor gasoline, turbo fuel, and naphtha. Some refined products are stored along the top of the river bank in front of the refinery near the head of the dock so that they can be fed to waiting barges, either by gravity or by pump feed. Other refined products are stored in the tank farm to the north of the refinery. Some fifty tanks for the storage of crude oil and refined products have a total capacity of slightly less than 300,000 barrels.

The amount of crude oil utilized at Norman Wells has remained near the same level over the last five years but the value of the products sold has declined slightly since 1962. Although crude oil production totals are not available since 1960, field withdrawals amounted to approximately 500,000 barrels in 1965,⁴ i.e. the oil field produced approximately 1400 barrels of crude oil per day.

⁴ Pers. comm., Imperial Oil Limited, Norman Wells, June, 1966.

TABLE XIV⁵ - PRODUCTION AND VALUE OF CRUDE OIL, NORMAN WELLS 1950-1960

Year	Production (barrels)	Value (\$)
1950	189,472	188,164
1951	287,717	208,867
1952	351,632	246,838
1953	329,508	355,032
1954	369,887	373,283
1955	405,219	404,235
1956	449,409	420,842
1957	420,844	387,192
1958	505,320	455,050
1959	459,654	424,627
1960	497,421	436,805

The value of refined products produced at Norman Wells reached a peak in 1962 and declined until 1964 but made a slight recovery in 1965. The company received \$2,734,000 from the sale of 498,000 barrels of refined products in 1965.⁶

⁵ Department of Northern Affairs and National Resources, Statistical Report on Oil and Gas Activities, 1920-1960, N.W.T., Yukon, and Arctic Islands, Ottawa, 1961, p. 17.

⁶ Pers. comm., Imperial Oil Limited, Norman Wells, June, 1966.

TABLE XV⁷ - VALUE OF REFINED PRODUCTS, NORMAN WELLS 1962-1965

Year	Value in Thousand Dollars		
	Saleable Products	Consumed at Refinery	Total
1962	2,734	209	2,943
1963	2,312	198	2,521
1964	2,100	209	2,298
1965	2,433	222	2,655

Site

Norman Wells is located on the eastern bank of the Mackenzie River fifty miles northwest of Fort Norman. The settlement, which has an elevation of 250 feet above sea level, stretches along the top of a cut bank about thirty-five feet high, with a broad sloping beach below. To the immediate northwest of the settlement, Bosworth Creek has built out a conspicuous delta into the Mackenzie River. About two miles inland, the plain gradually rises to the Norman Range which attains an elevation close to 2000 feet. The plain behind the settlement is low and poorly drained except for a low ridge upon which the airstrip has been built. Consequently, the community is bordered to the rear by extensive areas of muskeg and a chain of lakes, locally called 'Seepage Lakes', which occupy the shallow depressions. This area of poor drainage parallels the River. The surface formation of the town site consists of glacial material and recent silts and sands approximately 100 feet deep. The top ten feet consists primarily of glacial pebbles and till underlain by shales and sandstones.⁸

⁷ Loc. cit.

⁸ Ridge, op. cit., p. 455.

Norman Wells, typical of most river bank settlements, is an elongated development stretching along the river. The entire settlement is located on one level, but two small stream channels tend to divide the community into sectors. One of these channels separates the government residential zone at the eastern end of the community from the rest of the settlement. The other separates the Imperial Oil residential and refining sector at the western end of the settlement from the central warehouse. Expansion of the settlement area, if required by future growth, is possible east and west along the river bank. Inland, the poorly drained area will limit expansion in this area unless the muskegs are drained.

Permafrost which is continuous in the area has caused problems in the past, but the problems largely have been overcome by the use of special construction techniques. The active layer averages eighteen inches in depth over the townsite where bulldozers originally scraped off the insulating vegetative cover. Inland in the unaltered areas, the surface layer thaws only to a depth of less than a foot. Buildings which were constructed over permafrost before modern techniques were developed suffered extensive damage from slumping and frost heaving. All major buildings in the community are built either on piles driven into the permafrost or on thick gravel pads.

Because of the greater local depth of the active layer of the permafrost and the river bank location, the inhabited townsite is well drained. However, at times of heavy precipitation or peak runoff the roads become very muddy. Surface materials become saturated quickly because they are largely composed of silt, clay and fine sand. Ditches have been dug beside the roads to aid drainage during the wet periods.

In cooperation with the government, Imperial Oil Limited built a large earthen-filled dock in 1963. The previous dock was severely damaged by ice during spring break-up. Also, the new and larger dock is able to handle the unloading and loading of two or three river barges at one time. The dock, which extends out into the river for approximately 200 feet and is approximately 50 feet wide, provides ample space for the unloading of barges by large machines as well as providing a large area for storage of the products that are ready to be shipped. A product pipeline and a safety steam line extended under the surface to the end of the dock enable the bulk loading of refined oil products. Because the dock extends far out into the river, its usefulness is not affected by the frequent fluctuations in the water level and also, since the dock is a well built, reinforced structure, it has not suffered from ice damage during the spring break-up.

Population

Certain significant features of the local population are similar to those discussed in the previous two settlements. Here again as the group under discussion is small, statistical analyses probably are of limited value, but, nonetheless, certain characteristics may be distinguished. The population structure of the community is affected to a significant degree by slight changes in population. The number of persons resident in the community is highly variable throughout the year, especially between the winter and summer seasons. There are only a few persons in the community who could be classed as permanent residents.

Most members of the community have either been transferred to Norman Wells for a specific period of time or have been hired to

work in the community and only intend to work in the settlement until they have earned a 'stake'. Most employees of the service agencies such as the Department of Transport have been transferred to Norman Wells, while only a minority of Imperial Oil Limited employees have been transferred to the settlement. The bulk of the oil company's employees have been hired to work in the settlement. However, there are several families which intend to remain in the oil community. Presently, there are no second generation residents of Norman Wells other than young children. Unlike the 'local service and administrative center' and the 'satellite settlement', the population of the company town is predominantly 'white' with only a few Indian and Metis residents.

The population of Norman Wells in June, 1966, was 318 persons,⁹ but this total includes at least sixty-four persons who were working in the settlement for the summer season and did not reside in the community throughout the whole year. Even though many persons are only seasonal residents, the permanent population has increased appreciably since 1953 when the refinery operated on a seasonal basis only.¹⁰ In 1953, Norman Wells had a summer population of 105 persons--eighty of these were associated with Imperial Oil and all but three of the remaining twenty-five were government personnel. During the winter season, a caretaking crew of twenty persons was left to keep up the Imperial Oil Limited property. Consequently, the settlement had only forty-five residents for six months of the year.¹¹ Since 1956, the refinery has operated

⁹ Field Survey, June, 1966

¹⁰ Although the refinery was operated on a seasonal basis until 1956, the only source of information concerning the population during the seasonal operation stage of development is Ridge's Thesis (op. cit.) which was written in 1953.

¹¹ Ridge, op. cit., pp. 472-473.

on a year-round basis, with the result that the permanent population of the community has increased. Prior to 1956, most of the population was unmarried;¹² subsequently, a larger number of married persons and their families have come to live in Norman Wells. In 1966, there were thirty-eight families¹³ resident in the oil community. The increase in the population is the result of in-migration of married persons seeking permanent employment rather than a natural increase of a resident population.

One of the most significant aspects of the population of Norman Wells is the length of residency of the members of the community and the seasonal variation in the number of resident persons. As was indicated earlier, a large number of the residents of the community have been transferred to the settlement by their employer and their length of stay in Norman Wells is dependent on the wishes of the employee and employer. Most Imperial Oil Limited employees remain in the community for at least two years, while the period of residence of the employees of other agencies is variable. In addition to persons who have been transferred to Norman Wells, some not previously associated with Imperial have been hired at Norman Wells. These are usually young single men who only work in the settlement to earn a 'stake' before returning to southern Canada. However, there are a few families who consider Norman Wells to be their home and intend to remain in the community.

During the summer, the population of Norman Wells increased appreciably with the influx of seasonal labour. It is during the months

¹² Loc. cit.

¹³ Field Survey, June, 1966.

of May, June, July, and August that the major repairs, construction and shipping of oil products takes place at the refinery. Imperial Oil Limited hires temporary labour to carry out these seasonal tasks. The total number of persons employed by the company has ranged from over forty persons in the winter to over eighty in the summer.

TABLE XVI¹⁴ - MONTHLY NUMBER OF IMPERIAL OIL LIMITED EMPLOYEES

NORMAN WELLS, 1965

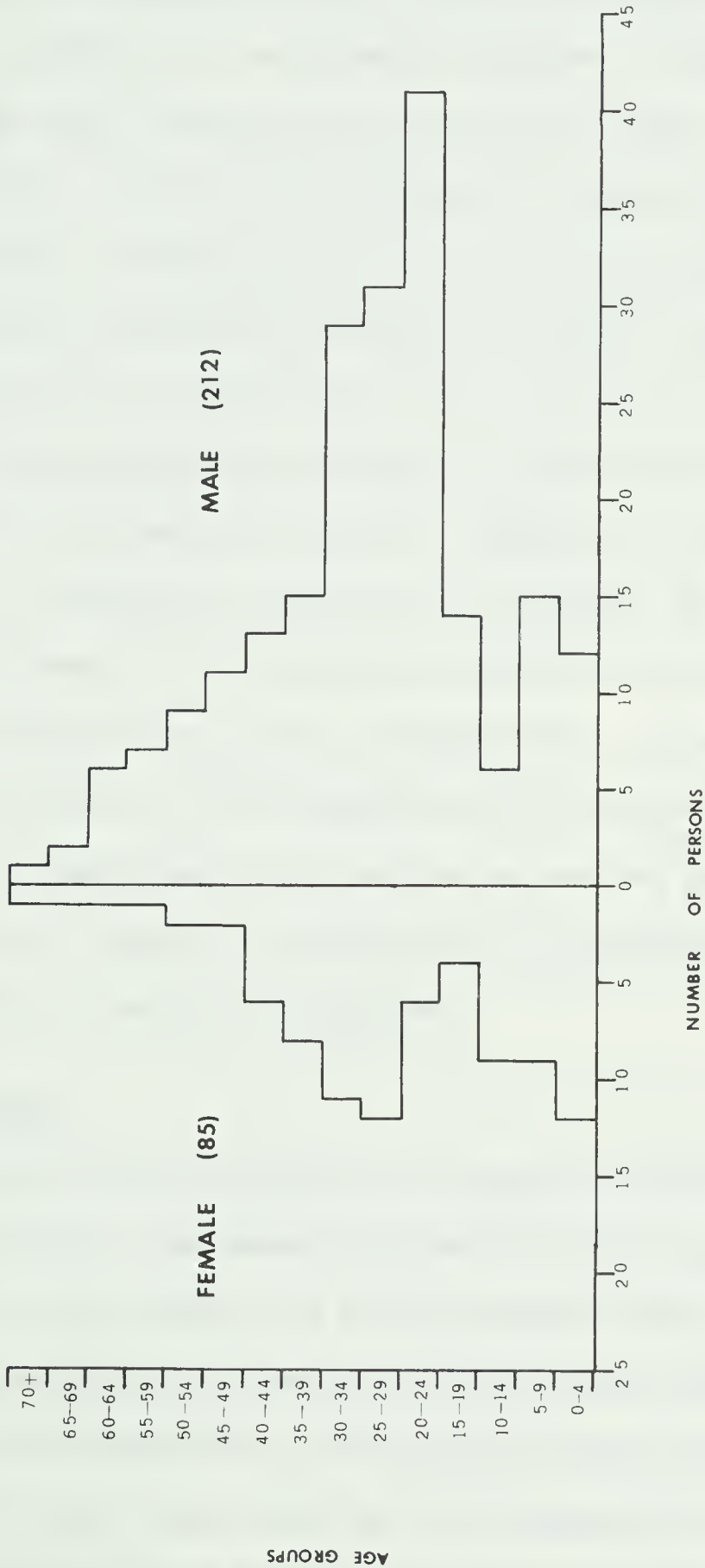
Month	Number of Employees
January	43
February	43
March	55
April	54
May	67
June	76
July	81
August	67
September	61
October	56
November	53
December	50

The age-sex structure of Norman Wells, graphically represented in Figure X^I is radically different from that of Fort Norman or Fort Franklin. The most striking features of the population structure are the number of males compared to the number of females and the dominance

¹⁴ Pers. comm., Imperial Oil Limited, Norman Wells, June, 1966.

Figure XI

AGE-SEX STRUCTURE, NORMAN WELLS, 1961



of young males between the ages of 20 and 34 years. The sex-ratio (the number of males per 100 females) is 249.4 and this is indeed much higher than that of the previous two settlements discussed. Young males in the 20 to 34 year age group comprise 34 per cent of the total population of the community. Both of these factors are typical of recent frontier settlements. Young married couples and young males who have not become firmly established elsewhere are willing to migrate to small isolated centers such as Norman Wells for a few years in order to earn high wages. The age group below the age of 19 years accounts for only 27.0 per cent of the population and this disparity is the result of the immaturity of the settlement coupled with the patterns of immigration. The lack of females in the population reflects the lack of opportunities for employment for women in Norman Wells. It can be expected that in the future, if the community matures and more families settle permanently, the proportions in the various age and sex groups will become less striking. However, the dominance of young males in the population is likely to continue for sometime.

Labour Force and Employment

As can be expected from the study of the age-sex structure of the Norman Wells population, the number of persons in the labour force (15 to 64 years of age) is high. In 1961, there were 229 persons or 77.1 per cent of the population in the labour force--a much higher proportion than that of Fort Norman (55.7 per cent) and Fort Franklin (47.9 per cent). Of the total labour force of the oil community, 187 persons (81.6 per cent of the labour force) were gainfully employed. The number of opportunities for labour in the settlement often outstrips the number of persons available for employment, especially

during the summer. Consequently, most of the persons employed are transferred or recruited from southern Canada. One of the problems in the community is the recruitment of persons who are willing to live in Norman Wells for several years.

The problem of the local labour supply could be overcome partly through the education of Indians and Metis in the area. With appropriate skills, this group, which seems to be more willing to live in small, isolated settlements than whites, could provide the community with a permanent local pool of labour. Imperial Oil Limited is willing to employ Indians and Metis provided they prove themselves to be capable and reliable workers. In the summer of 1966, five Indians and Metis were year-round employees of the Company while another eight were employed during the summer season.

Although most Indians and Metis are employed by Imperial Oil Limited, there are two family heads who are not. Both of these men earn a living in much the same manner as their counterparts in Fort Norman, that is through a combination of hunting and trapping combined with earnings from seasonal or casual wage labour.

In June, 1966, of the 132 persons¹⁵ working in the settlement, Imperial Oil Limited employed approximately 60 per cent of this total. Approximately 15 per cent were employed by the Department of Transport. The remaining 25 per cent were working for several supporting service industries such as Pacific Western Airlines, Northward Aviation, and Northern Transportation Company Limited. Approximately 45 per cent of the persons working in Norman Wells during June, 1966, were seasonal employees. The source and number of persons employed in Norman Wells is summarized in Table XVIII.

¹⁵ Field Survey, June, 1966.

TABLE XVII ¹⁶ - EMPLOYMENT IN NORMAN WELLS, JUNE 1966¹⁷

Source of Employment	Permanent Employees	Temporary or Seasonal Employees	Total
Imperial Oil Limited	46	34	80
Department of Transport	16	4	20
Territorial Liquor Store	2	--	2
D.of I.A. & N.D. - Teacher	1	--	1
Postal Office	1	--	1
Canadian National Telecom.	1	--	1
R.C.M.Police	--	1	1
Northern Transportation Co. Ltd.	--	18	18
Pacific Western Airlines	2	--	2
Northward Aviation	2	--	2
Mackenzie Mountain Lodge	2	--	2
Calex Construction	<u>--</u>	<u>2</u>	<u>2</u>
	73	59	132

There are only limited opportunities for unskilled labour in Norman Wells and the few opportunities that do exist tend to be seasonal in nature. Most persons who are employed in the settlement are either semi-skilled or skilled. The number of persons in the various occupation divisions in 1961 is shown in Table XIX.

¹⁶ Field Survey, June, 1966.

¹⁷ Ordinarily, the Northern Transportation Co. Ltd. has four men stationed in Norman Wells during the shipping season. The fourteen additional men were engaged in the construction of two residences.

TABLE XVIII¹⁸ - OCCUPATION DIVISIONS OF THE LABOUR FORCE

NORMAN WELLS, 1961

Occupational Division	Number of Persons Employed
Managerial	6
Professional	16
Clerical	9
Sales	1
Service and Recreation	20
Transport. and Communications	29
Fishermen	1
Miners	1
Craftsmen	80
Labourers	23
Occupations Not Stated	<u>1</u>
ALL OCCUPATIONS	187

Services and Housing

The services available in Norman Wells are comparable to those of most small towns in southern Canada, while only a few large settlements in the Northwest Territories equal them. Utility lines extend throughout the entire settlement. Dwellings and recreational facilities are on par with those of many southern towns much larger than Norman Wells.

Services

Services Supplied by Imperial Oil Limited

1. Utilities

Imperial Oil Limited supplies the settlement with electricity, natural gas, steam heat, water, and sewage disposal facilities. These utilities are supplied free of charge to all Company employees. All water, sewage and steam lines are boxed together on the surface in

¹⁸ Census of Canada, 1961.

insulated, wooden channels, a utilidor system. In such a system, the steam lines are able to keep the other utility lines from freezing during the winter months. Domestic water is taken from Bosworth Creek. The pumping station is located to the west of the settlement on the edge of the creek and has a pumping capacity of 720,000 gallons per day. In addition, the water is filtered and chlorinated. However, should the creek water become unuseable or incapable of supplying the local demands, river water may be used. Imperial Oil Limited supplies domestic water at a cost of \$.90 per 1000 gallons to all non-company consumers. Filtered river water is used in the Imperial Oil Limited boilerhouse.

Sewage is drained into septic tanks located along the river bank. In turn, the septic tanks discharge into the river. Steam is used in heating all of the Company buildings and most non-Company buildings. It is generated by four locomotive-type boilers and one automatic gas-fired boiler. The locomotive type boilers are fired with reduced crude from the refinery and natural gas from the oil field. Non-Imperial Oil Limited consumers buy the steam at a cost of \$2.95 per 1000 pounds. Several of the recently built Department of Transport residences and other agency buildings are heated by natural gas or oil furnaces. In addition, natural gas is used in kitchen stoves throughout the community. The cost of gas to non-Company consumers is \$.50 per 1000 cubic feet.

Electricity is generated by four diesel engines which have a capacity of 300 K.W. Non-Company consumers pay \$.07 per Kwh. for electrical power. Up until the land telephone line reached Norman Wells in 1965, Imperial Oil Limited operated a local telephone system.

Since the arrival of the landline, the community telephone system has been operated by Canadian National Telecommunications.

2. Roads

Norman Wells has a well kept road system and the upkeep of the roads is shared by Imperial Oil Limited and the Department of Transport. There are approximately fifteen miles of road in and around the settlement. The street plan of the community consists of two roughly parallel streets extending the length of the settlement with four minor cross streets joining them at intervals.¹⁹ The oil company services the roads in and around the sector of the community which it occupies as well as approximately six miles of peripheral road. The government department looks after the roads in its residential area as well as the airport road and a road which extends six miles east of the settlement to a large radio tower and a small lake. The lake is used as a base for float planes operating from Norman Wells. Roads tend to become very dusty during the dry periods and muddy after a heavy rainfall. Oil, which is spread on the roads during the summer, helps to keep the dust down.

3. Other Company Services

In addition to the provision of utilities to the settlement, Imperial Oil Limited also operates a small hospital, provides fire protection, and supplies recreation facilities. The well-equipped, ten-bed hospital is staffed by one doctor and two nurses. Company employees receive medical attention free of charge while other persons using the hospital are charged \$18.50 a day plus the Doctor's fee. Most non-Company employees cared for are covered by the Territorial

¹⁹ See Figure XI, Land-Use Zones, Norman Wells.

Medical Plan. On the average, fewer than half the patients are Company employees. In the event of serious illness or injury, patients are sent to Inuvik or Yellowknife where they can receive more specialized medical attention.

Imperial Oil Limited maintains a fire alarm and control system for the entire community. This arrangement includes a modern alarm system with call posts at strategic points throughout the settlement.

The Company supplies recreational facilities, but these facilities are operated by the Norman Wells Recreational Club. The Club's membership is made up of all residents of the community. Recreation facilities include a large recreation hall, a two sheet curling rink and a ball field. The recreation hall, which is the center of social life in the community, houses a coffee bar, badminton courts, table tennis facilities, a shuffle board, a juke box and a small library. Twice a week, movies are shown free of charge. Also, the recreation center is used for dances, bingo games and card parties which are held at regular intervals.

In addition to these other facilities, the Company supplies a Church building for the settlement. The building is divided and is occupied by both the Roman Catholic and Protestant Churches. During the period from April to October and periodically over the balance of the year, there is a Catholic Priest resident in Norman Wells. Through cooperation with St. Stephen's College at the University of Alberta, Imperial Oil Limited brings a student Protestant minister to the settlement during the summer season; that is, from May through to September.

Government Services

1. School

Norman Wells has a two-classroom Federal Day School which is operated by the Department of Indian Affairs and Northern Development. In the 1965-1966 school year, the twenty-three students enrolled in grades one through to eight were taught by a single teacher and used only one room of the school. A second teacher has been hired for the 1966-1967 school year and the second classroom will be utilized. The government provides housing for teachers. As was noted in the discussion of schools in the two other settlements, students who progress past the eighth grade are sent to the larger centers to complete their High School education.

2. Department of Transport

An important aspect of the community is the presence of employees of the Department of Transport. The air services section of the Department provides services similar to those in southern Canada. Through its four branches--civil aviation, construction, meteorological and telecommunications--it operates and maintains the Norman Wells airfield and other Department buildings, provides weather data for local, national, and international use, and provides radio communication services and radio aids to navigation. The airfield, a one and one-half mile long gravel-covered strip, is capable of handling large aircraft. As well as taking surface weather observations, the Department maintains a radiosonde station which gathers high level meteorological data.

Also, the employees of the Department of Transport and their families add significantly to the size of the settlement.

3. Territorial Liquor Store

Since 1960, the Territorial Government has maintained a large, well stocked liquor store in Norman Wells.²⁰ The store, which is staffed by one permanent employee and one part-time employee, services the settlements of Fort Norman, Fort Franklin, Fort Good Hope, and Colville Lake as well as Norman Wells. All liquor supplies are shipped in by barge during the summer. In the 1962-1963 fiscal year the value of liquor sales of the store was \$73,944.00.^{21,22}

4. Post Office

Imperial Oil Limited supplies the building for the local post office and the Superintendent of the local refinery is, in name, the Postmaster. However, he has little to do with the operation of the post office. A local woman is employed as postmistress. Mail is brought in and dispatched from the settlement four times per week on the regular air service flight from Edmonton.

5. Northern Transportation Company, Limited

The Northern Transportation Company, a Crown corporation, is the only shipping company operating on the Mackenzie River system. Since most oil products produced by Imperial Oil are shipped by barge, this amounts to a large volume of the transportation company's cargo. Northern Transportation operates a shipping office during the four-month shipping season in Norman Wells. A large warehouse also is maintained in association with the office. In the summer of 1966,

²⁰ Formerly, Imperial Oil Limited provided this service for the community.

²¹ Annual Report, Commissioner of the N.W.T., 1963.

²² The values of sales since 1962-1963 are not available.

fourteen men were employed by Northern Transportation in the construction of two prefabricated residences for the four regular summer employees. In 1966, 4300 tons of freight were shipped by barge to Norman Wells while 60,973 tons of freight, mostly oil products, were shipped out of the settlement. Oil products shipped from Norman Wells make up approximately one third of all freight hauled by the Northern Transportation Company, Limited.²³

6. Other Government Services

Other government services such as Area Administration and Indian Affairs, and Game Management are provided by the local service and administrative center which is, in this case, Fort Norman. There is an R.C.M. Police Officer resident in the settlement during June, July, and August. Otherwise, the community is served by the R.C.M. Police Detachment in Fort Norman. The resident school principal acts as the Area Administrator's representative in the community.

Commercial Enterprises

Commercial enterprises, other than Imperial Oil Limited, present in the community are Pacific Western Airlines, Northward Aviation and the Mackenzie Mountain Lodge. There are no open retail stores in Norman Wells.

Pacific Western Airlines maintains a ticket and freight office at the Norman Wells airport and this office is operated by two persons. Formerly, the company had a small aircraft for charter service based in Norman Wells, but this service has been taken over by Northward Aviation.

²³ Pers. comm., Northern Transportation Co., Ltd., Edmonton, Alberta

The airline company employs men on a casual basis when large volumes of air freight are received. Pacific Western supplies its permanent employees with subsidized housing and flies in all materials, such as foods and dry goods, to its employees free of charge.

Northward Aviation operates a float-equipped Otter aircraft which is based in Norman Wells for its scheduled weekly air service to Fort Norman, Fort Franklin and Fort Good Hope as well as charter service. It also maintains an office at the Norman Wells airport. The base of operations for the company aircraft is D.O.T. Lake, a small lake six miles east of the settlement.²⁴ A warehouse and dock are located at the lake, while Imperial Oil Limited maintains refuelling stations at that location. Northward Aviation maintains a dwelling in the settlement for its two fulltime employees.

The Mackenzie Mountain Lodge, located 500 yards from the airport on the bank of the Mackenzie River, was built in 1965 and is operated by a man and his wife for a Calgary company. The lodge consists of three housetrailer joined together and it has ten rooms, a kitchen, and dining room, as well as quarters for the two employees. Guests are accomodated at a cost of \$18.50 per day per person. The bulk of the lodge's guests are travellers staying overnight in the settlement before continuing on to Fort Good Hope, Fort Franklin and Fort Norman, and hunting parties in August and September en route to the Mackenzie Mountains.

There are no open retail stores in Norman Wells such as the Hudson's Bay Company store in Fort Norman, but Imperial Oil Limited and the Department of Transport maintain private grocery stores for the

²⁴ The small lake is used as a base of operations for several reasons. The Mackenzie River becomes too rough to land small aircraft during high winds and it may have drift wood which makes landing difficult. The River develops pressure ridges in the ice during winter.

use of their employees only. Imperial Oil Limited buys non-perishable goods at near wholesale prices in Edmonton and has them shipped in by barge. The cost of these goods to the consumers is governed by the price at which the goods can be bought in Edmonton plus the cost of transportation and handling charges to pay the store clerk's wages. The final prices tend to be near city prices for similar goods. Fresh foods, which are brought in weekly by air freight from Edmonton, tend to be slightly more expensive than in the city. Although Imperial Oil Limited subsidizes part of the air freight cost, the consumer also bears part of the high cost of air transport. The Department of Transport supplies its employees with groceries at the same prices as would be paid in Edmonton for the same goods. All non-perishable goods and frozen meat are shipped in by barge during the summer, while fresh foods, other than meat, are shipped in by air at regular intervals. The government department bears the cost of transportation. Employees are restricted to the value of purchases they can make each month--each adult member of a family is allowed to buy \$35.00 worth of food per month and each child, a half ration (\$14.50) per month. A family of four (two adults and two children) can spend \$105.00 per month on food. Most people feel that they would not spend more than they are allowed each month, except perhaps during the Christmas season.

Persons not employed by the Department of Transport or Imperial Oil Limited must either order their year's supply of food from the outside and have it shipped in by barge or make the fifty mile trip to the Hudson's Bay Company store in Fort Norman to buy groceries. Most persons order a year's supply of groceries from the outside. All members of the community purchase drygoods and other

items through mail order catalogues. However, most residents spend their holidays in southern Canada and during their stay they usually buy most of the drygoods they will require for the next year.

Housing

All residents of the community are provided with accomodation by their employers. The few Indians and Metis who are unemployed must provide their own dwellings. The dwellings provided by the employers are of a similar standard to those of middle income families in southern Canada. Indians and Metis not working for the outside agencies live, for the most part, in small, one or two-room shacks constructed of scrap material. These dwellings appear to be in a worse state of repair than those of the Indians and Metis in Fort Norman and Fort Franklin.

Imperial Oil Limited provides accomodation for both its single and married employees. Married persons are provided with completely furnished houses, either duplex or single units. The houses, with two exceptions, are frame dwellings built during the Canol Project. The one-storey dwellings have from one to three bedrooms. Imperial Oil Limited has five duplexes and thirteen single units. As well as supplying free heat, light, power, water, sewage, and accomodation, the company gives married employees an \$80.00 monthly living allowance. Single persons are given free room and board and laundry and are housed in seven dormitories. They are fed in the company mess hall.

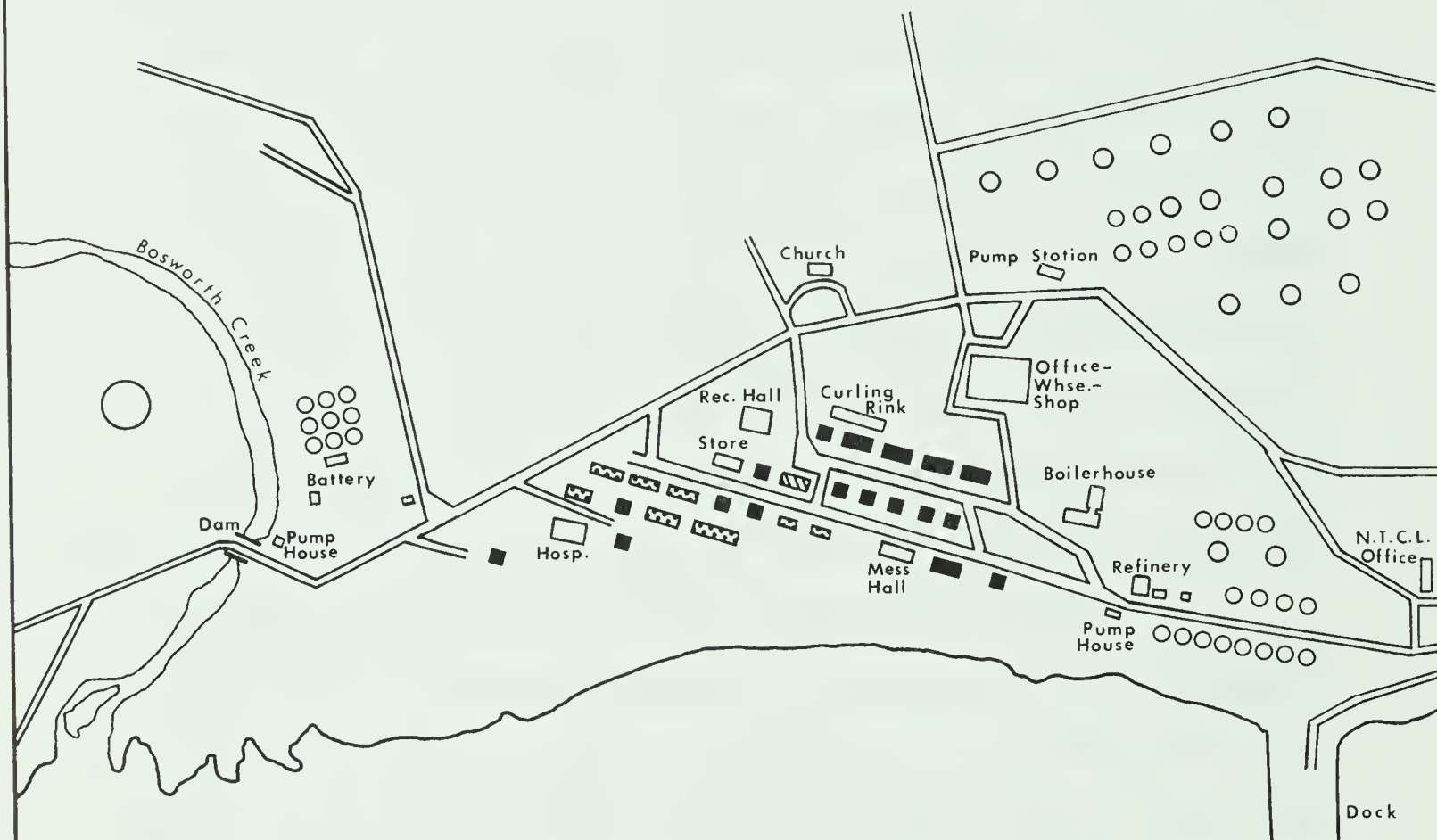
Department of Transport employees are also provided with accomodation but, unlike Imperial Oil Limited employees, married persons must rent the houses and single employees must pay room and board. The government department maintains fourteen dwellings, eight

of which are frame dwellings, built during World War II and three of these are two storey residences. One of the double storey dwellings is a single family unit while one of the remaining two is a dormitory and mess hall. The family dwellings have either two or three bedrooms depending upon the size of the structure. Since 1960, the Department has built six new frame residences for married couples and five of these are duplexes. Married couples pay \$75.00 per month rent for their furnished dwelling. They pay five per cent of their basic salary, up to a maximum of \$20.00 per month for utilities; the department pays the remainder. Single employees pay \$76.00 per month for room and board. In most cases, the northern allowance paid to Government employees covers the cost of rent and utilities for married persons and the cost of room and board for single employees.

As has been mentioned previously, Pacific Western Airlines, Northward Aviation and Northern Transportation maintain dwellings in the settlement for their employees. The two airline companies each have a two bedroom, pre-fabricated dwelling constructed in 1965 for their employees, while the water transportation company maintains two prefabricated, trailer-type dwellings built in 1966 for its employees.

Land-Use

Essentially, the street plan of Norman Wells consists of two roughly parallel streets extending the length of the settlement with four minor cross streets joining them at intervals. The main street of the settlement stretches along the top of the river bank about fifty feet in from the edge and is approximately one mile long. The second street parallels the first about 150 to 200 feet inland, but joins the main street at each end of the community. This combined



IMPERIAL OIL

- Single Unit Residence
- Duplex Residence
- ▤ Bunkhouse
- ▥ Fire Hall

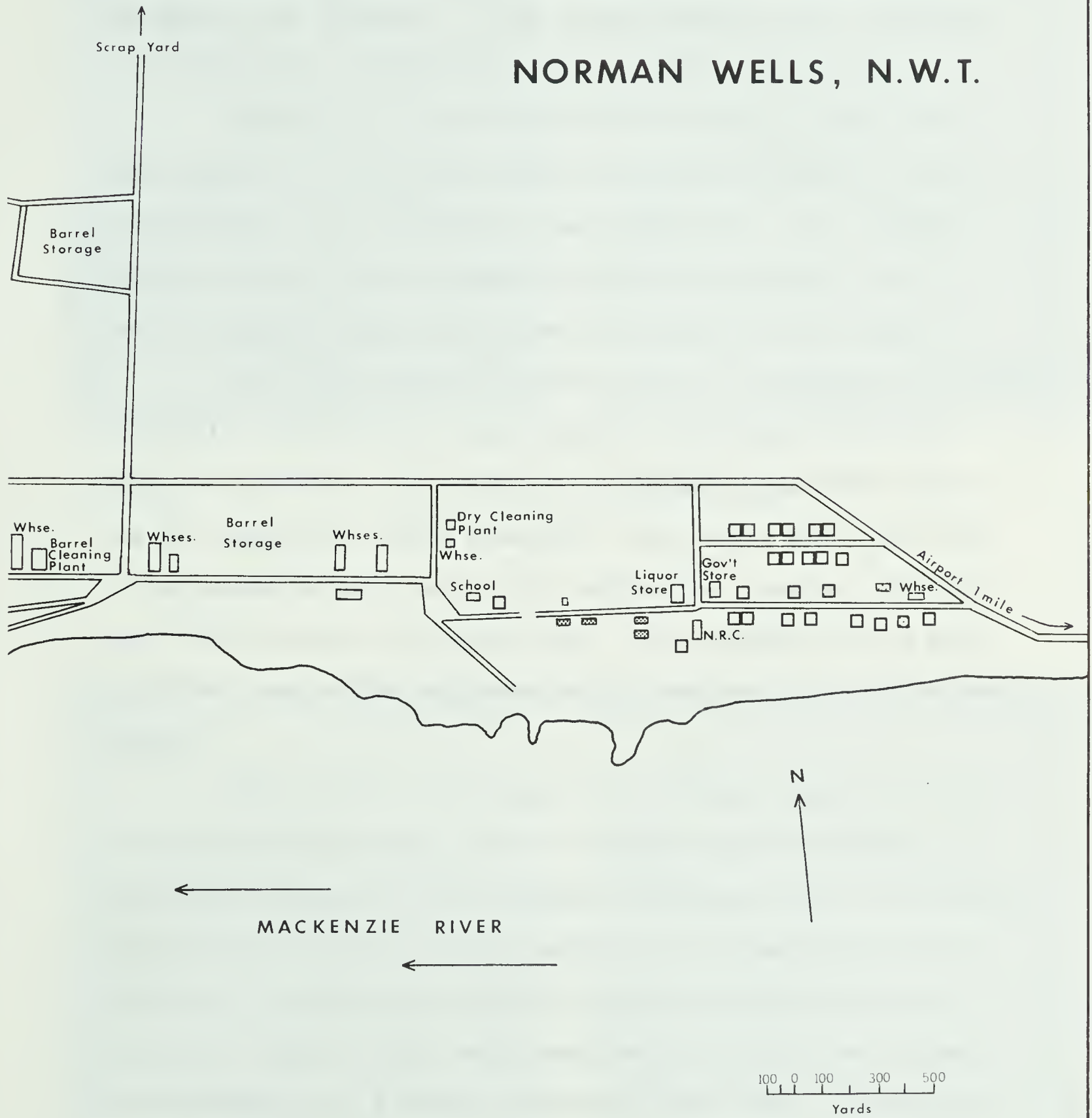
GOVERNMENT

- Single Unit Residence
- Duplex Residence
- ▤ Bunkhouse

OTHER

- ▤ Residence

Figure XII



Source: Field Survey, 1966

road leads to the producing wells immediately west of Bosworth Creek, while to the east it connects to the airport, which is approximately one mile to the northeast. In the western section of the settlement, the street plan is discontinuous, with a number of dead-end streets.

There are four well defined land-use zones in Norman Wells. They include the Imperial Oil Limited residential, refinery, warehouse and government zones from west to east respectively. The inhabited townsite covers an area of approximately twelve acres with each of the four land-use zones covering about one-quarter of the total.

The western quarter of Norman Wells is the Imperial Oil Limited residential zone with its living quarters, recreational center and service facilities. The residences are arranged along three streets and are connected by wooden sidewalks. Also located within the zone is the recreation hall, ball field, curling rink, hospital, firehall, post office, church, and company store. The buildings are well maintained with many of the residences having lawns and flower and vegetable gardens.

The next zone to the east is the refinery zone with its maze of aluminum painted storage tanks. Centered around the refinery and associated buildings are the laboratory, boilerhouse and a new building which houses the general office, maintenance shop and food and parts warehouse. The tank farm and pump station is in the northern part of the zone. Along the river bank, immediately in front of and adjacent to the refinery, are a number of product storage tanks. Extending out from the refinery zone is the loading dock. Gravity feed plays an important role in the loading of bulk fuel on barges.

East of the refinery zone is the warehouse zone. Within this zone there are a number of warehouses, the Northern Transportation

Plate XIII



Norman Wells - Imperial Oil Limited Refinery.

Plate XIV



Norman Wells - Imperial Oil Limited boiler house.

Plate XV



Loading barges at the Norman Wells dock.

Plate XVI



Norman Wells - Imperial Oil Limited residential area.

Plate XVII



Norman Wells - Imperial Oil Limited
duplex for married couples.

Plate XVIII



Norman Wells - Department of Transport
married employees' residence.

Company Office and warehouse, the barrel cleaning plant, a dry cleaning plant and barrel storage yards. A number of vacant buildings occur throughout this zone as remnants of the Canol Project.

The most eastern quarter of the settlement is the government zone. This zone was the former residential area during the Canol Project, but is now the location of the government residences and services. The residences of the airline companies and Northern Transportation Company, the Territorial Liquor Store, the school and teacherage are located in this zone. Most of the buildings are arranged along the main street parallel to the river.

Income and Earnings

Incomes of Imperial Oil employees tend to be high. The wages paid by Imperial Oil Limited are comparable to those paid by the company in southern Canada. Employees work six days a week whereas in the south they work five days a week. Approximate yearly incomes of permanent Imperial Oil Limited wage employees in Norman Wells are in the neighbourhood of \$7,000.00 per year. In addition to these relatively high incomes, married persons are given living quarters and utilities free of charge plus a living allowance. Single employees are given free room and board. Since there are few opportunities to spend money in Norman Wells most people are able to save a large proportion of their income.

Although earnings of employees of the Government are lower than those of the Imperial Oil Limited employees--approximately \$6,000.00 per year--they also are able to save a large share of their income. The northern allowances²⁵ received by the government employees generally

²⁵ Employees of the Federal Government working in the Northwest Territories receive special allowances for working in isolated locations.

covers the cost of rent and utilities for married couples and the cost of room and board of the single employees.

Community Organization

Unlike Fort Norman and Fort Franklin, Norman Wells is not completely unorganized. Formally, the settlement has been designated as a 'Development Area'. The development area is created by the Commissioner of the Northwest Territories when he considers that the development of a settlement has reached the point where certain rudimentary controls are necessary to ensure orderly development. A site control or development officer is appointed and he is usually the person who is the area administrator. In Norman Wells, the local school principal is the representative of the area administrator. If an advisory committee has not been formed before this stage is reached, the administrator usually urges its formation. As yet, no such committee has been formed in Norman Wells. This committee has no official status and its function is to express the views of the residents. Even though the settlement has been officially designated as a development area, the Superintendent of the Imperial Oil Limited operation provides most of the formal direction in the community. Since he is the senior Company official in the settlement he is responsible for the operation of all aspects of Imperial Oil Limited's interests in the community.

All residents of the community are members of Norman Wells' Recreation Club. Imperial Oil Limited supplies the recreation facilities including the recreation hall and curling rink. The Company maintains the buildings and supplies heat, power, water and sewage facilities free of charge. In addition the steward or stewardess of the recreation hall, although employed by the recreation club, is given free room and board by the Company. The recreation club operates the recreation hall

and curling rink and organizes the many social activities in the settlement.

Regional Importance

The presence of oil deposits at Norman Wells and the subsequent development of the deposits were instrumental for much of the twentieth century development, especially in mining in the Northwest Territories. Relatively low-cost local fuel enabled the development of the silver-uranium mines of Great Bear Lake, the gold mines of Yellowknife and the modernization of the water transport system as well as providing relatively low-cost fuel for settlements in the Mackenzie District and the western Arctic. Since the completion of the Mackenzie Highway to Great Slave Lake and later to Yellowknife and the recent completion of the Great Slave Lake Railway, the large market for oil products in that area has been lost. Southern companies are now able to supply refined products to the Great Slave Lake communities at lower prices than the refinery in Norman Wells. However, Norman Wells continues to supply this area with bunker fuel--a relatively unrefined and cheap fuel. The market area for Norman Wells' products is the Mackenzie District north of Fort Simpson but not including that settlement, the arctic coast west to Alaska and east to Gjoa Haven, and the more southerly of the arctic islands to the north. Even though the refinery at Norman Wells is small by southern standards it is capable of meeting the need of its market area and at a lower cost than the fuels could be shipped in from the south.

Summary

In summary, Norman Wells, which has been classified as a 'company town', has a number of distinct characteristics. The location of the settlement is determined by the location of oil resources and the community has developed as a result of the development of this resource by the Imperial Oil Company. The life of the community is tied to the continued availability of oil. Although the community is maturing and a larger number of families are taking up residence, the population of the settlement is dominated by young males between the age of 20 and 34 years. Most persons living in this dominantly white community have migrated from the 'outside' and only intend to remain for several years before returning to southern Canada. They are attracted to the settlement by the prospect of earning a high income and saving a large proportion of this income. The population of the settlement increases by approximately 20 per cent with the influx of seasonal workers during the summer season. A large proportion (77 per cent) of the Norman Wells population is in the labour force and a large proportion (81.6) of the potential labour force is employed. Sixty per cent of the persons working in Norman Wells are employed by Imperial Oil while the remaining 40 per cent are employed by the government and other supporting services. There are few opportunities for unskilled labour in the settlement and the opportunities that do exist tend to be seasonal rather than permanent. The services available in the settlement are comparable to those of most small towns in southern Canada and the majority of these services are provided by the Imperial Oil Company for its employees and operations, but all residents of the community are able to share these services. The

The Company supplies all the services, including housing, free for its employees, while other residents must pay for utilities, and although their employers supply accommodation, they must pay rent. Although there are no open retail stores in the community both Imperial Oil and the Department of Transport maintain private grocery stores for their employees and prices are generally comparable with those of southern Canada. Within the community there are four distinct land-use zones, They include the Imperial Oil residential and service, refinery, warehouse, and government zones from west to east respectively. The community has been formally designated as a 'Development Area', but the management of Imperial Oil continues to provide most of the direction for the settlement. Functionally, Norman Wells is an oil extraction and refining center which is regionally important because it supplies refined oil products to the northern half of the Mackenzie District and the western Arctic. It would seem that the characteristics outlined will be typical to some degree of the other settlements in the sub-arctic boreal forest zone which have been developed by a single company in order to develop a local resource.

CHAPTER VII

CONCLUSION

The classification of the three settlements--Fort Norman as a local service and administrative center, Fort Franklin as a satellite settlement, and Norman Wells as a company town--is based on historical development and function of the settlements. The local service and administrative center developed during the nineteenth century as a fur trading post around which Indians tended to settle. Such settlements attained a greater degree of permanency with the establishment of missions and later, government services such as R.C.M.P. detachments, Indian Agents, schools, nursing stations or hospitals, and Game Management Services. At present, this type of settlement functions as a local fur trading center. The resident government services provide administration and services for a larger area including bush camps and satellite settlements. The satellite settlement is essentially an Indian community with certain basic services which may include a trading post, mission, school, and nursing station. The settlement of Fort Franklin has developed relatively recently compared to the local service and administrative center and it is off the main-line of communication. Originally, the Indians who utilized the area of the satellite settlement traded with the local service and administrative center. Although the local service and administrative center has lost this regional trading function, the satellite settlement remains dependent upon it for government administrative

services. The third type of settlement, the company town, has been developed by a company for the sole purpose of developing a local resource. Housing and services are provided by the company for its employees who are brought in from outside the local area. The site of the community is determined by the existence of the resource and its livelihood is tied to the continued availability of the resource.

The three communities exist as islands of settlement within the sub-arctic area of the Northwest Territories. The distance of the settlements from the more densely settled areas of Canada and the lack of year-round, inexpensive transportation to and from the area adds appreciably to the cost of living and provision of services, as well as to the more obvious disadvantage of being semi-isolated. Further disadvantages are placed on the settlements as a result of the physical environment, particularly climate. The ice-free shipping season on the Mackenzie River System lasts only four months. The cost of heating is higher than farther south and the presence of permafrost increases the cost of construction. The possibilities for the cultivation of food crops are limited, while the slowness of tree growth mitigates against the development of a forest product industry.

The history of the area may be divided into a number of periods; though they may overlap to a greater or lesser degree, they are sufficiently distinct to be useful in a survey of the initial development and subsequent settlement patterns. Prior to 1800, the area was occupied only by aboriginal Indians. During the nineteenth century the search for new fur trading territory initiated the exploration and settlement of the Mackenzie. Later in the fur trading period missionaries followed the traders and established missions at or near the fur trading posts.

Fort Norman was one of the settlements which developed during this period. In the twentieth century there has been an awakening of interest in the Northwest Territories. The development of oil and mining shifted the economic base from fur to oil products and minerals and settlements such as Norman Wells developed. With increasing numbers of whites in the Mackenzie, the government took an active interest in the area and began to provide administrative services, schools, and nursing stations or hospitals to the settlements. It was during this period that Fort Norman developed its government administrative function. Even though the site of the present settlement of Fort Franklin had always been a focal point of Indian activity in the Great Bear Lake area, the settlement did not become firmly established until the early 1950s.

The economy of the majority of the Indians and Metis is essentially a subsistence one and this group is the largest single component of the population of Fort Norman and Fort Franklin. The Indians and Metis are able to maintain a livelihood through the use of local renewable resources and through earned and unearned income. There are few permanent jobs available, but there are increasing opportunities for seasonal employment. Although most individuals trap, reliance on trapping as a source of cash income has been reduced with increased sources of income through wage employment and government assistance. The basic source of food are the renewable resources, especially fish, moose, and caribou and these are supplemented by food bought at the local trading post. This dependency on seasonal wage labour, trapping and renewable resources has resulted in a relatively unstable economy since there may be wide fluctuations in the opportunities for wage employment from year to year, in prices and abundance of fur in any

year, and in abundance of fish and game from year to year.

The study has shown that there are fundamental differences in the nature of the three settlements, but there are also some basic similarities between Fort Norman and Fort Franklin. Norman Wells differs radically from the two Indian and Metis communities. The common bond between the three settlements is their location and physical environment and the associated problems.

Fort Norman is fundamentally an Indian and Metis community, while Fort Franklin is an Indian settlement. The majority of the residents of both communities have a subsistence economy, i.e., they rely on the renewable resource base and a limited amount of wage employment and unearned income. However, the residents of the satellite settlement seem to have more initiative. This is reflected in the higher per capita incomes in the community. Per capita income in Fort Norman in 1963 was \$318.00 and that of Fort Franklin in 1965 was \$508.70. In addition, a larger share of community income (81.2 per cent) in Fort Franklin was earned, while a smaller proportion (64.4 per cent) was earned in Fort Norman. Most male residents of the satellite community are employed seasonally in the sport fishing and transportation industries with the result that 53.3 per cent of community income is derived from wage employment. Fewer Fort Norman males obtain seasonal employment although the same opportunities are available to them; consequently, the income derived from wage employment accounts for a smaller proportion (36.2 per cent) of community income. There is a lack of permanent employment opportunities in both settlements. All Fort Franklin males in the labour force trap, with the exception of those who are employed in the settlement, while only 75 per cent of the Fort Norman males

capable of trapping trapped in the 1965-1966 season. In addition, Fort Norman trappers earned less from trapping than Fort Franklin trappers.

There are several significant differences between the populations of Fort Norman and Fort Franklin. Eighty-four per cent of the population of the former settlement are Indian and Metis and 96 per cent of the population of the latter community are Indians. Fort Franklin does not have a Metis population. The number of persons living in Fort Norman (250) has remained relatively stable over the last five years and this is largely the result of a lowering of the rate of natural increase and some out-migration. However, over 51 per cent of the population is below the age of twenty. On the other hand, during the same period Fort Franklin has grown rapidly and this increase in population is the result of a high rate of natural increase; this rate of natural increase has shown no indication of declining. Approximately 62 per cent of the population is below the age of twenty. Problems must be faced by both settlements in the future when these young people enter the labour force. Will the resources of the area be able to support the increased use or, alternatively, will employment opportunities be available to support them?

Fort Norman has a larger number of white residents compared to Fort Franklin and this is the result of the government administrative services which are present. The white residents who are supplied with housing by their employers occupy a separate area of the settlement in Fort Norman and there is a tendency in this direction in Fort Franklin.

Both the Indian and Metis settlements have only rudimentary services; these include a mission, a school, a nursing station and a

Hudson's Bay Company store. Electrical power is produced by the government for the use of the whites; however, Indians and Metis are to be supplied with electricity in the future. It does not seem likely that utilities such as water and sewage system will be built in the settlements in the near future. The high cost of providing these services and the inability of most residents to pay for them mitigates against the construction of these utilities.

The housing is poor by southern standards for the indigenous people and Metis of both renewable resource-based settlements. Government-sponsored housing has helped to alleviate the problem, but most of these houses are still small and overcrowded.

Both Fort Norman and Fort Franklin, which are unorganized communities administered by the Department of Indian Affairs and Northern Development, function as very local trading centers. Fort Norman, by virtue of the government administrative services present, also functions as an administrative center for the local area, including the settlements of Fort Franklin and Norman Wells.

Norman Wells differs in most respects from the other two settlements studied. The community was developed by private enterprise in order to exploit a local resource and most of the fundamental characteristics of the community are related to this development. Most residents of the oil town have immigrated from southern Canada and intend to live in the settlement only for a few years. They are attracted to the community by the prospect of earning high incomes and saving a large proportion of this income. Unlike the population of Fort Norman, the population of Norman Wells (318 persons) is predominantly adult. Only 27 per cent of the population is below the age of twenty, while 34 per cent of the population is in the age group from 20 to 34 years.

One of the striking features of this population is the dominance of males (Norman Wells has a sex ratio of 249.4), whereas Fort Norman and Fort Franklin have a more equitable balance between males and females. In addition, 90 per cent of the Norman Wells population is white, whereas the population of the other two settlements is predominantly Indian and Metis. Unlike Fort Norman and Fort Franklin, where few people are permanently employed, most residents of Norman Wells have permanent employment. In fact, seasonal labourers are brought in to work in the settlement during the busy summer season. In the summer 1966, 81.6 per cent of the potential labour force was employed, 60 per cent of these by Imperial Oil, and the remainder by the government and other supporting services. In addition, most persons employed in the community were semi-skilled or skilled, whereas most persons in the labour force of Fort Norman and Fort Franklin are unskilled.

One of the fundamental aspects of the company town is the provision of services comparable to those found in southern Canada. These include electricity, natural gas, steam heat, water and sewage disposal facilities, a hospital, recreation facilities and fire protection as well as the provision of accommodation for its employees. The company also maintains a store for its employees. In order to attract employees, the company finds it necessary to provide services comparable to those in southern Canada.

In order to place some controls on the development of the community, it has been designated formally as a 'Development Area' by the government. However, the management of Imperial Oil Limited continues to provide most of the direction for the community.

It was stated at the beginning of this study that the central focus would be the development of a broad classification of three types of settlement which might be applicable throughout the Boreal Forest zone of the Northwest Territories, and establishment of some of the fundamental characteristics of each settlement. The classification, which was developed on the basis of historical pattern of development and function, was derived from an analysis of the settlements of Fort Norman, Fort Franklin and Norman Wells. Since there is little written information concerning comparable settlements, it would be difficult to determine whether the settlements studied are representative of the types proposed. However, it is hoped that this thesis has set out some of the fundamental characteristics of the settlement types proposed and that it has contributed to a better understanding of northern settlements in general and the settlements of Fort Norman, Fort Franklin, and Norman Wells in particular.

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APPENDIX I
CLIMATIC DATA¹

Fort Norman--300 feet above sea-level, 36 years of observation
Norman Wells--290 feet above sea-level, 8 years of observation
Port Radium--600 feet above sea-level, 9 years of observation.

A. TEMPERATURE--monthly average of mean daily temperature °F

Month	Fort Norman	Norman Wells	Port Radium
January	-18.6	-18.6	-15
February	-13.2	-15.3	-17
March	-1.4	-1.5	-2
April	18.8	18.3	14
May	41.4	41.4	35
June	55.5	56.2	48
July	59.9	60.7	54
August	54.8	55.5	51
September	42.8	42.9	42
October	25.2	24.8	27
November	-0.3	0.3	6
December	<u>-14.8</u>	<u>-14.8</u>	<u>-9</u>
YEAR	20.8	20.8	20

¹ Canada, Department of Transport, Meteorological Division, Climatic Summaries For Selected Meteorological Stations in Canada, Toronto, 1954-1956.

B. PRECIPITATION--monthly average in inches

Month	Rain	Fort Norman		Norman Wells			Port Radium		
		Snow	Precipitation	Rain	Snow	Precipitation	Rain	Snow	Precipitation
Jan.	--	4.6	0.46	--	6.5	0.65	--	3.5	0.35
Feb.	--	4.9	0.49	--	5.8	0.58	--	2.5	0.25
Mar.	0.07	3.5	0.42	--	3.4	0.34	--	5.2	0.52
April	0.02	4.1	0.45	0.08	4.6	0.54	0.02	2.2	0.24
May	0.90	2.5	1.15	0.49	1.8	0.67	0.39	2.1	0.60
June	1.32	0.2	1.34	1.38	0.2	1.40	0.60	0	0.60
July	2.02	--	2.02	2.02	--	2.02	1.32	0.3	1.35
Aug.	1.93	0.1	1.94	2.65	trace	2.65	1.83	0	1.83
Sept.	0.78	2.8	1.06	1.38	2.8	1.66	0.82	0.7	0.89
Oct.	0.15	7.0	0.85	0.12	6.5	0.77	0.29	6.7	0.96
Nov.	--	6.1	0.61	trace	8.4	0.84	trace	8.4	0.84
Dec.	--	4.5	0.45	--	6.7	0.67	--	5.2	0.52
YEAR	7.19	40.3	11.22	8.12	46.7	12.79	5.27	36.8	8.95

C. FROST

	Fort Norman	Norman Wells	Port Radium
Average Frost Free Period (days)	46	91	70
Last Frost--Average	June 22	May 29	June 20
Earliest	May 23	May 15	May 30
Latest	July 14	June 28	July 12
First Frost--Average	Aug. 7	Aug. 28	Aug. 29
Earliest	July 19	Aug. 7	Aug. 2
Latest	Sept. 14	Sept. 9	Sept. 11

Climate--Fort Franklin

Some idea of the climate of Fort Franklin can be gained by comparing the climatic data of Fort Norman and Norman Wells in the Mackenzie Valley with that of Port Radium on the east side of Great Bear Lake.

From this comparison it would seem that the winters in Fort Franklin are not much more severe than those in Fort Norman and Norman Wells. Spring comes later and the summers are cooler. The drop in fall temperatures is delayed. Although the climate of the Northwest Territories becomes more severe from west to east, probably the main factor which accounts for these differences between Fort Franklin and the Mackenzie Valley is the location of Fort Franklin near a large body of cold water. The sparseness of vegetation in the area around Fort Franklin would support the conclusion that the climate is more severe than that of the Mackenzie Valley.

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